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RICHMOND, VA., DECEMBER, 1927

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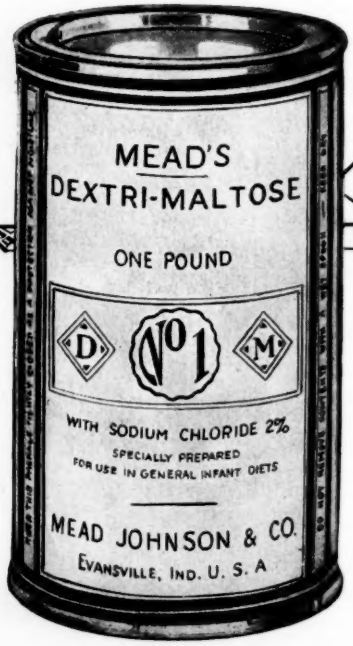

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THE PHYSICIAN'S PART IN POPULARIZING BREAST FEEDING AND REDUCING INFANT MORTALITY.*

By W. A. PLECKER, M. D., Richmond, Va.
Director of Vital Statistics, Virginia Board of Health.

Success in applying the progress of modern medical knowledge is perhaps in no way more clearly illustrated than in the reduction of the infant death rate.

If we accept the New Zealand rate, now under 40 per 1,000 births, as the goal which Virginia may reasonably be expected to reach, it will be necessary to more than halve our 1926 rate of 83. Under present conditions this must be done, if at all, chiefly by the family physician, whose influence reaches to the most remote corners of the State, and whose opinion and word are final in all questions of sanitation and personal hygiene.

The printed teaching of the Board of Health though simple, clear and attractive, does not go where the doctor goes, and if it did, would be given but little consideration when the doctor speaks.

To the present, the efforts of the Board of Health are necessarily directed chiefly to the fundamental work of sanitation and the prevention of infectious diseases. Except in the schools, but little can be done to teach personal hygiene, and that little falls far short of reaching anew each year, sixty thousand homes where there are babies, many of whose health or lives depend upon what the mothers know of their wants, and of their willingness if need be to sacrifice their own comfort and pleasure that the babies may have the best.

Who above all others can induce them to do this? The physician, and the physician alone!

It is necessary, therefore, that physicians realize the importance of this subject, and that at least a considerable per cent of them become enthusiasts in putting the idea across. To do this it is essential that they become familiar with the work which has been done during recent years in this country by Sedgwick, Richardson, Moore and others, and by King of New Zealand, who developed public opinion and started a work which has extended not only to other parts of the British Empire, but around the world.

Demonstrations made in Minneapolis, by Richardson in Nassau County, Long Island, and Wakeman in Hornell, New York, show the possibility of securing a near approach to 100 per cent of mothers who can be induced to nurse their infants and who can be enabled, in part at least, to do it.

Sir Frederick Truby King, of New Zealand, in 1907, became convinced that "practically 100 per cent of mothers could breast feed their babies, and that it was often due to ignorance of this fact that babies were unnecessarily weaned."[1]

"Dr. King felt that this was the starting point for all Infant Welfare Work," and upon that foundation organized a work which has made that country the leader in reducing the infant death rate.

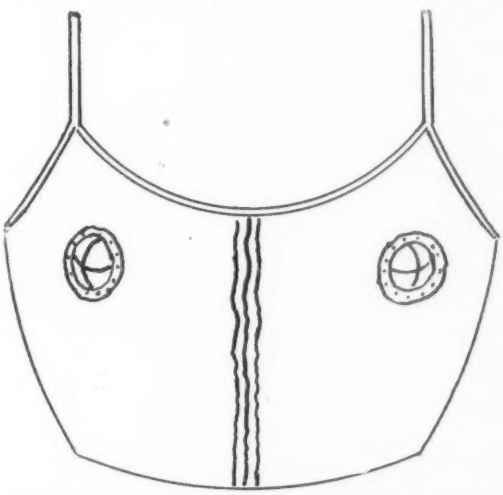

Fig. 1.—Nipple aerators sewed into the brassiere prevent and cure inflammatory nipple troubles by evaginating the nipple and permitting application of the open-air method of treatment. (Manufactured by Becton, Dickinson and Company)

The writer, who from the beginning to the end of his twenty-five years as a general practitioner was an enthusiastic advocate of breast

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia in Petersburg, October 18-20, 1927.

feeding, found it possible during that period to attain success in almost 100 per cent of his cases. That was, too, before the development of the new method of expressing the last drops of milk after nursing.

The physician must first be convinced himself that *breast feeding* is a life-saving measure; he must then thoroughly familiarize himself with the methods of overcoming the many difficulties that arise. He must be unyielding in his demand that the mother co-operate with him, and, finally, he must be willing to make the personal sacrifice of time and effort to attain success.

The situation is so clearly expressed by Bolt, of Baltimore, in his monograph, "The Mortalities of Infancy" (Abt's Pediatrics, Volume II), that I can do no better than quote as follows:

"Infant Feeding.—There is no question that the character of feeding during the first year of life is the main factor in the health destiny of the baby. Although prenatal and natal conditions may largely account for neonatal deaths, we must look to difficulties in feeding as the underlying cause of the disorders which result in so many deaths during the later months. The early establishment of breast feeding is of paramount importance. Upon this point there should be no controversy between the obstetrician and pediatrist. Valuable time is sometimes lost in the early days of life because the obstetrician in his solicitude for the mother overlooks the importance of early establishment of proper nursing habits. In every country there is unanimity of opinion as to the supreme value of breast feeding as a preventive of infant mortality. Our whole clinical experience, strongly supported by laboratory research, affirms that mother's milk is the safest and best food for the infant and by all odds the most economical. There is no real substitute for mother's milk."

Difficulties.—The first is to overcome the *mother's unwillingness* to make the sacrifice of personal comfort and pleasure which she imagines that she does when she ties herself down to the task of giving her baby a true mother's care.

This is the point at which the physician displays the degree of his own convictions and zeal, and demonstrates whether or not he possesses the personality and perseverance necessary to win the mother, and then to follow up this first success by patience and readiness to meet and overcome difficulties as they arise. The question of mode of feeding should be definitely settled when engaged as attendant, and the prenatal care be directed to that end.

The second problem is to overcome any *physical defects of the nipples* that may exist, and which are in many cases the cause for abandoning breast feeding. The condition of the nipples of mothers (especially of primiparae) who did not breast feed previous children should be carefully inquired into when engaged. If flat or sunken they should be carefully drawn out twice a day or oftener and trained into shape, beginning two weeks or a month in advance. A simple expedient which I have frequently used with success, both before and after the birth of the child, is an ordinary bottle with neck of suitable size, from which hot water has just been poured. The flat or sunken nipple will be drawn into the neck of the hot bottle pressed over it. Care must be used not to excite labor pains.

Sore or Cracked Nipples contitutes the third problem. Our old professor of obstetrics did not, in 1885, teach us the cause and prevention of puerperal fever, but he did impress upon us the fact that abscess of the breast can be avoided by preventing cracked and sore nipples, or by quickly healing them in the beginning. Obedience to this injunction enabled the writer to pass through his professional career without having a patient experience the horror of mastitis, except one who developed a small abscess a month after she was dismissed, and who failed to heed the parting injunction always given at the last visit, "Be sure to let me know if your nipples begin to become sore or cracked."

I wish here to call your attention to the aerator, a recent wire device by Dr. C. Ulysses Moore, of Portland, Oregon, which, sewed into the breast binder, he says, "Prevents and cures inflammatory nipple troubles by evaginating the nipple and permitting application of the open-air method of treatment." Powers and Anderson, of Richmond, have, by request, placed these in stock. Druggists will doubtless procure them when you desire it.

The fourth and most frequent cause for premature weaning is an *insufficient milk* supply, or milk of supposed poor quality.

Women may occasionally be met whose milk does not suit or nourish their infants. The

writer cannot recall one such in his own experience with about 1,000 patients, though in many cases complementary feeding was necessary. An insufficient milk supply is not a reason for depriving the infant of all that there is. With proper diet and hygienic care of the mother and with practice of the new method of expressing the last drops of milk, at least five times a day, the quantity may be greatly increased.

The method of manual expression is well described by Dr. C. U. Moore as follows:

"The correct position and motion of the fingers vary with the type of breast. With

Fig. 2.– Deep and "together" postion for expressing milk and the easy scissors-like motion (thumb and first finger practically parallel) most useful with the pendent type of breast.

the pendent breast the finger and thumb come together with a scissors-like motion. In such cases, manual expression is simplified, as almost any method works. Virginal breasts and those with inverted nipples present a much more difficult problem. In these, the finger and thumb are inserted deeply into the areolar well and brought together three-fourths inch behind the nipple. This might be described as a pincer's motion or a bull-dog grip. Mastery of manual expression technic is indicated by ability to force large, strong streams of milk a distance of 3 feet or more."

I am indebted to Dr. Moore and to *The Journal of the American Medical Association* for permission to use the cuts illustrating his paper.[2]

A well selected diet for the mothers is essential to improve the quantity as well as the quality of her milk.

Milk supplies the calcium needed for both mother and child, in addition to proteins, fats, and sugar. One quart of milk contains also much of the water which is needed in the formation of the mother's milk. Leafy vegetables, especially such as slaw, lettuce, and celery, with tomatoes, all of which are eaten raw, meat, and whole grain bread will round out the menu. All of these articles are too frequently missing from the diet of the nursing mother. The same diet should be used during pregnancy and will do much to prepare the mother for the natural feeding of her baby from the beginning.

She should secure not less than nine hours of sleep at night, and arrange for a nap of half an hour in the afternoon.

The practice of the methods thus briefly outlined will save many babies from the bottle, and even, with the best of care, from the grave.

The physician should master the method of completely emptying the breast five times a day, by manual expression, and should devote the time necessary to teach it to mother and nurse.

The obstetrician should not consider his task complete if he has failed to start the mother well on the road to the natural feeding of her baby, and warned her to report promptly any irregularities that may arise.

Breast feeding will accomplish much, and save the lives of many infants, but it will not insure against careless and ignorant mothers. Every physician knows that it is the custom of such mothers to take their infants to the table and to allow them to nibble at just what the rest of the family is eating. We believe that if we could secure the facts in all cases, many deaths from diarrhœa would properly be traced to unsuitable food, in addition to the breast. While inducing mothers to nurse their babies, physicians may well warn also against feeding them other food unsuited to their age and powers of digestion.

The Bureau of Vital Statistics, desiring to make a statistical study of the prevalence of artificial feeding, and to learn just how much physicians are responsible by actual advice or by indifference, recently sent out questionnaires to the visiting nurses of the State, and to the mothers of the infants dying during the first part of 1926. The replies have been compiled and, while admitting the result as a rather crude piece of work owing to the varying character of the information furnished, we find a rather close agreement of the figures as secured

from the reports of the nurses and of the mothers.

Nurses reported upon 638 infants as to time of weaning and whether or not it was done upon the advice of physicians. It was found that 52 per cent of all infants weaned during the first six months was by advice of physicians. Of the white there were 56 per cent, and of the colored 21 per cent.

The mothers' figures of infants that died were 51 per cent weaned by advice of physicians, of the whites 58 per cent and of the colored 36 per cent.

Of all infants 6 months and under reported upon by nurses, 52 per cent were breast fed. In Chicago, in 1922, only 20 per cent of one-year-old infants were breast fed. In 1927, after intensive educational work, 90 per cent are breast fed, while the infant death rate was reduced 34 per cent, being in 1926, 67 per 1,000 births.[5]

The Virginia infant death rate for 1926 was 83 per 1,000 births, while 52 per cent of the Virginia infants are breast fed, compared with Chicago's present 90 per cent.

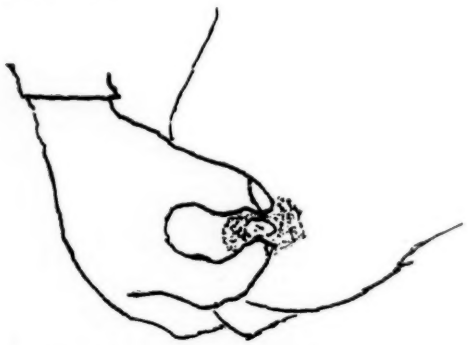

Fig. 3.—Pincers-like motion with tips of thumb and finger coming together deep in the breast behind the nipple; useful with virginal types of breasts and in those with inverted nipples.

It is not presumed that the great reduction in the Chicago death rate during five years is due alone to the increase in breast feeding, though it is doubtless true that that is the chief factor.

When we increase our breast feeding rate from 52 per cent to 90 per cent we will at the same time, and by the same effort, improve all sanitary conditions that may have a part in securing the result. This sanitary improvement will also reduce the adult death rate as well.

Your attention will now be directed to the reasons assigned by the nurses and mothers for weaning. These are similar, but as the nurses' reports are better, theirs will be used. As the table is of unusual interest and is worthy of careful study, it will be given in full as tabulated.

NURSE QUESTIONNAIRE

REASONS FOR WEANING.

	Advice of Doctor		Without Advice		
	White	Black	White	Black	Total
Insufficient milk	37	13	34	2	86
Mother's milk did not agree	13	4	4	1	22
Not gaining on breast	4	3	4	--	11
Baby would not nurse	3	1	2	3	9
No milk	1	2	--	--	3
Milk weak	7	--	8	--	15
Reason unknown	8	--	4	--	12
	73	23	56	6	158

Sixty per cent of total faults with milk were weaned by advice of the physician.

Fifty-seven per cent of white faults with milk were weaned by advice of the physician.

Eighty per cent of black faults with milk were weaned by advice of the physician.

OTHER REASONS FOR WEANING.

	Advice of Doctor		Without Advice		
	White	Black	White	Black	Total
Toxic condition mother	--	3	--	--	3
Pregnancy	5	2	8	2	17
Mother not interested	--	--	1	1	2
Mother had diphtheria	--	1	--	--	1
Run-down condition mother	--	1	--	--	1
Mother sick	7	1	2	--	10
Mother had kidney trouble	1	--	1	--	2
Mother had typhoid	1	--	--	--	1
Mother had whooping cough	1	--	--	1	2
Mother had measles	1	--	--	--	1
Mother compelled to work	--	1	3	--	4
Baby had cleft palate	1	--	--	--	1
Baby had convulsions	1	--	--	--	1
Abscess of breast	2	--	--	--	2
Abnormal breast	2	--	--	--	2
	22	9	15	4	50

ACCEPTABLE REASONS FOR WEANING.

	Advice of Doctor		Without Advice		
	White	Black	White	Black	Total
Mother died	2	--	3	--	5
Baby in hospital	--	1	--	--	1
Taken from mother	--	--	--	5	5
Mother had T. B.	5	--	--	--	5
	7	1	3	5	16

SUMMARY

	White	Black	White	Black	Total
Faults with milk supply	73	23	56	6	158
Sickness of mother or child (not T. B.)	22	9	15	4	50
Unavoidable other than T. B.	2	1	3	5	11
T. B. of mother	5	--	--	--	5
	102	33	74	15	224

Sixty per cent of total (reasons given) were weaned by advice of the physician.

Fifty-eight per cent of white (reasons given) were weaned by advice of the physician.

Sixty-eight per cent of black (reasons given) were weaned by advice of the physician.

The writer is in accord with those who maintain that open tuberculosis of the lungs is the only absolute reason for taking the infant from the mother's breast. Of the 224 cases with causes given, only five were for tuberculosis. In five cases the mother died, and in five cases the child was for some reason taken from the mother, while one child was taken to the hospital, making a total of sixteen in which weaning seemed justifiable, leaving 208, or 93 per cent of the total in which the infants, according to the accepted standard, might have been

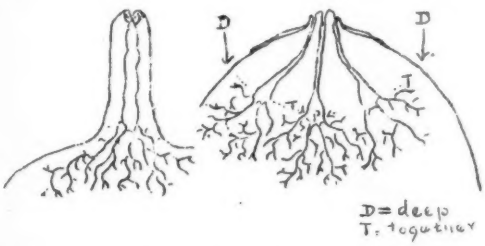

Fig. 4.—Structure of the cow's udder (left) compared with the human breast (right), showing the reasons for deep and "together" motions used in milk expression, in contradistinction to the stripping motion used in the dairy.

breast fed in whole or in part. Complementary feeding after each inadequate breast feeding until the milk supply is sufficient, must, of course, be practiced to the extent of producing a normal rate of gain of the infant's weight.

At times the condition of the mother may require the temporary withdrawal of the child. In such cases the flow should be kept up by manual expression, and the child returned as soon as possible.

Such infectious diseases of the mother as scarlet fever do not prevent nursing. The danger from infection is less than the danger from artificial feeding, and may be greatly lessened by preventing direct contact of the child with the mother. It is possible, however, to express the milk and feed it from a bottle.

In many instances when the physician is said to have advised weaning, especially when the babies died, he may have simply consented to the suggestion of the mother. If he did, he displayed a lack of interest, indicating either that he has not comprehended the importance of such a step, or that he was unwilling to enter upon a struggle to secure for the baby his natural birth-right, and the one thing of greatest importance in saving him from an early grave.

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2. Breast Feeding Problems. C. U. Moore, M. D. and H. G. Dennis, M. D., *Journal Amer. Med. Assoc.*, December 11, 1926, p. 1970.
3. Chicago Health Bulletin, February 8 and 15, 1927.

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TYPHUS FEVER.
Report of a Case in a Child.*

By ST. GEO. T. GRINNAN, M. D.,
and
MANFRED CALL, M. D.,
Richmond, Va.

It is so long since typhus fever has been reported in Virginia, and this disease is so uncommon here, that physicians are not apt to consider typhus fever in making a diagnosis. There are many physicians in Virginia who have never seen a case of typhus fever, and if they have seen them, it was not in Virginia.

A brief description of typhus fever is given so that the case to be reported may be compared with a normal case.

Typhus fever has followed war, famine and the dark pages of the world's history, not in hot countries, but in the temperate zone. The Balkan States, Ireland and Great Britain furnish typhus literature. Typhus fever has been more prevalent in the cold months in Europe. In North America typhus is found in the Southern States, especially New Mexico, Indian Reservations and in Mexico. Rio Grande fever has been shown to be typhus fever. Brill's disease in the Port of New York is a mild form of typhus fever.

The usual cause of typhus is the infected body louse. It has been said that "typhus fever prevails in inverse ratio to the amount of soap use."

The incubation period of typhus fever is five to eighteen days. The average incubation period is eight to twelve days. The disease begins with a chill and headache. The temperature quickly rises usually to 104 degrees F., or higher, and remains throughout the active course of the disease which is usually thirteen days. In a child the temperature may last eleven or twelve days. The temperature falls by crisis or a slow crisis. The disease affects

*Read at the fifty-eighth annual meeting of the Medical Society of Virginia, in Petersburg, October 18-20, 1927.

the nervous system, the muscular system (pains), and the vascular system.

In the severe cases, coma vigil, delirium and muttering are common.

The heart rate is 110 to 120.

The kidneys are little affected.

The lungs may show bronchitis.

The white blood count averages 10,000 to 14,000.

The abdomen is not distended.

There are no relapses; after the third to fifth day there appears a maculo-petechial eruption, noted first in the axillary folds and on the back. This eruption quickly extends over the arms and legs, then over the entire body. The rash at first has much the appearance of measles for which it has often been mistaken; it is not elevated at first. Later, the rash is papular, ½ millimeter high, ovoid in shape, dirty pink color, diameter 3 to 4 millimeters, fades on pressure but does not disappear. New crops occur until the ninth day. After the ninth day, all spots become more dirty pink, fade on pressure and show some hemorrhage in the center. In mild cases there are pin point hemorrhages.

The eruption which changes its appearance three times in the course of the disease lasts throughout the disease and does not fade until after the crisis on thirteenth day. The intensity of the eruption is directly proportional to the severity of the disease. After the crisis the rash disappears within three to five days and the bad signs of toxemia quickly go.

The spleen is enlarged in 60 per cent of the cases.

Two per cent of the cases are hemorrhagic.

The blood is infectious.

The blood of guinea pigs infected by typhus fever, shows minute bacillary bodies.

Brill's typhus showed gram positive obligate anaerobic bodies which required the presence of glucose in an unusually rich acetic fluid in the culture medium. (Brill in Nelson's Loose Leaf Medicine, Vol. 1, p. 193).

In 1916 da Roch Lima reported the observation of Prowazeki and himself that typhus infected lice regularly show innumerable minute bacillary bodies within the cells lining the stomach. The Richettsia-Prowazeki is probably the cause of typhus fever. Whether it is bacterial or protozoan in nature has not yet been determined.

Seventy per cent of the endemic cases occur in June, July, August and September. The fact that in endemic cases other members of the family are not infected suggests other means of infection than the body louse.

The rat is suggested as an indirect cause, especially in the Southern States of the United States. In Savannah, many of the cases of typhus have occurred in grain dealers where contact with rats is common.

In London, the mortality is 18.9 per cent, in Berlin, 23 per cent, and Mount Sinai hospital in New York, 20 per cent.

Deaths in hospitals are 11 to 60 per cent.

In epidemics, nurses and doctors are frequently infected.

In endemic cases, infection of attendants is not common.

Typhus fever is diagnosed by the Weil-Felix reaction.

In 1916 Weil and Felix isolated strains of proteus bacilli from the urine and stools of typhus patients which were agglutinated by serum of the patient.

One strain of proteus X 19 is very sensitive in dilution of 1:10,000 for agglutination test. The Germans and Austrians employed this method of diagnosis in the World War. A dilution below 1:100 is non-specific, being observed in the course of other febrile courses.

An agglutination test of 1:100 should be accepted. (Nelson's Loose Leaf Medicine).

Case: Female, age 7. Home in Connecticut, but had been in Virginia one month when taken sick, July 12, 1927. The incubation limit of eighteen days proves that the infection occurred in Virginia. The temperature quickly rose to 104.8 degrees F. On the fifth day a maculopapular eruption appeared in the axillary region on both arms, the legs and the back. The eruption had the appearance of measles. The child, however, had had measles. Later the eruption became elevated and did not disappear on pressure. Two or three days later the eruption changed in appearance and resembled fly bites. In the centre of the eruption there were pin point hemorrhagic spots. Gradually these spots became purplish purple. On the seventh day of the disease the child became delirious and appeared seriously ill.

July 19th: A tourniquet was applied to the arm for venous puncture (culture). Almost immediately there appeared multitudinous purpuric spots generalized from tourniquet to the finger tips.

Quite profuse nose bleeding occurred the same day.

Colonic irrigation was accompanied by half a pint of coffee colored fluid in clots, partly hemorrhagic, oozing from the intestine, partly swallowed blood from the nose bleeding.

The white cell count was 4,300; reds, 3,270,000; hemoglobin 62; neutrophiles 60; endothelial leucocytes 3. There was marked fragmentation of the lymphocytes, platelets 40,000.

July 22nd: Direct blood transfusion was done, 200 c.c. being given; the child now had a purpuric eruption over the entire body.

July 23rd: White count 14,000. Platelets 52,000. Realizing the danger of such a low platelet count, quartz light radiation was given over the body, both back and front as a means of raising the platelet count. Radiation was given daily until blistering occurred. The platelets were raised 20 per cent by this means.

The spleen was palpable at the costal margin. Reflexes were normal. Spinal fluid was negative (Pandy's test). Coma vigil, muttering and delirium was present. Temperature remained high.

Many tests and cultures for typhoid and paratyphoid A and B were negative. The stools were negative for parasites. The X-ray of chest was negative. Urine negative excepting an occasional trace of albumin.

The abdomen was much distended and rigid throughout. Muscular pains were intense and luminal was used to give rest.

There was slight enlargement of the lymph nodes in the axilla and groin.

The heart and liver were normal.

Diaphragm negative.

Continued blood tests all of which were negative were made for various diseases, as follows: Malaria, Malta Fever, Cambiensis, Tularemia, Encephalitis, Typhoid and Paratyphoid.

July 29th: Owing to low platelet count (54,000), blood transfusion was performed, 300 c.c. being given. The platelets were raised by transfusion to a factor of greater safety, 65,000. (The normal is 275,000).

On *August 1st*, a positive agglutination test for typhus fever was made with the proteus X 19 in dilution of 1:600.

On the twenty-fourth day of the disease a slow crisis began. The spots or rash began to disappear and turn a dirty brown, then a dirty yellow, and in three days were gone. The delirium disappeared with the rash when the temperature was normal. She made an uneventful recovery.

The writer believes that the two blood transfusions were of great value in this case.

CHEMISTRY AND MEDICINE.*

By WORTLEY F. RUDD, M. A., Richmond, Va.

All of us are, theoretically at least, intensely interested in practical applications of fundamental principles. The generation to which you and I belong has been characterized by the ability to make such applications to a degree undreamed of a generation ago. Our success in this field has become so phenomenal, and the benefits derived therefrom so widespread, to rich and poor alike, that we accept the situation with neither question nor comment.

In an address delivered before the Franklin Institute, of Philadelphia, and later published and given very wide distribution as a classic in epitomizing the modern world's relation to and dependence upon scientific work, Dr. Arthur D. Little, in speaking of scientists, whom he was pleased to call the Fifth Estate, says the "Fifth Estate is composed of those having the simplicity to wonder, the ability to question, the power to generalize and the capacity to apply. It is in short the company of thinkers, workers, expounders and practitioners upon which the world is absolutely dependent for the preservation and advancement of that organized knowledge which we call Science." Almost at the same time "What Price Progress" was published and commanded international attention. It aroused business men to the importance of fundamental research in industry as nothing else had ever done.

Almost within a stone's throw of where this meeting is being held today, the Allied Chemical and Dye Corporation has already begun work on a plant to cost more than $100,000,000. We learn that this vast enterprise will utilize chiefly just one scientific principle on a practical basis. The figures and the conception challenge the imagination. At Hopewell and Roanoke and Saltville and Richmond, and many other places in this traditionally conservative State of ours, many millions of

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money and thousands of workers are employed in the conversion of raw material into products of the most refined type under the guidance of highly trained chemists.

As important and interesting as these things are, I am not warranted in coming before the Medical Society of Virginia to talk about them unless these same fundamental chemical principles which are now the basis of the industries of the world have a direct and moulding influence upon you and your immediate tasks. It is unnecessary for me to have to prove this to you. Evidence of the interdependence of our professions is a daily experience. A single instance will show how close we are.

Tomorrow night in Richmond before a joint meeting of the Virginia Section of the American Chemical Society and The Woman's Club, Dr. Charles H. Herty, one of the most efficient and distinguished chemists in America, will talk on "Good Health, The Ultimate Aim of Chemistry." Recognition of the principle that good health is our chief aim, and that the public is being told about how we are working at the task, has given me the temerity to discuss it briefly with you. A sufficient excuse for this paper is, then, the fact that in much of your diagnosis your methods are those of the chemist, and in treatment the products of his researches are your chief dependence. Probably among the majority of physicians this point of view is now generally accepted. Even at the beginning of the present century, however, such was not the case. Well trained men in your profession were hopelessly divided on the value of chemistry to the practice of medicine. About that time, when Dr. Harvey W. Wiley was in the prime of his usefulness, he addressed the student bodies and faculties of the Medical College of Virginia and the University College of Medicine in a joint meeting. Among the many fine things he said was one statement which made a profound impression upon me, as it was a bold remark for those days. "Young men," he said, "many of you will live to see the day when bacteriology and pathology will be regarded as simply parts of the whole field of chemistry, so lay a broad foundation in chemistry that you may understand these other subjects which play such an important part in medicine." Now another picture of those same years—another distinguished physician who gave a considerable part of his time to the teaching of chemistry to medical students was accustomed to say something like this in his opening lecture each year. "Young gentlemen, the course of lectures which I am beginning today covers 96 hours. I could easily give you all of the chemistry you will ever need in the practice of medicine in a 20-hour course, but the curriculum calls for 96 hours. It, therefore, becomes necessary for us to cover much more ground than I think you will actually need in your life's work." At the time these widely different points of view were expressed, a few more or less exact tests on urine and gastric contents were the chemists' major contribution to diagnosis. Folin* was already beginning to develop methods for making blood chemical tests with the idea of applying them to the practical work of the clinician. Workers in the same field, Denis, Benedict, Lewis, Myers, Fine, and many others, contributed to the rapid development of reliable methods of clinical laboratory technic. Parenthetically, it is interesting to note that the great contributions to modern methods of blood examinations on a clinical basis have been made by American workers.

Progress in the past twenty years has been truly phenomenal. Highly developed research and refinements in chemical technic have given us an accurate knowledge of the human body in its chemical relations in both health and disease hardly dreamed of at the beginning of the present century. As a result of these refinements in technique and the application of some of the most fundamental of newer chemical philosophy to medical problems, physicians are now in possession of a vast amount of knowledge of the human body. You know that the blood stream, by a wonderful chemical mechanism of buffer salts, maintains a hydrogen ion concentration of 7.3 to 7.5, a very limited range in health; and that a change to the acid side of neutrality or a p H of 6.75 or on the alkaline to 7.7 or 7.8 is almost in every instance indicative of impending death; that an increase in the sugar content of the blood from a normal of about .1 of one per cent to .15 or .2 of one per cent is distinctly pathological; that in acute intestinal obstruction the urea nitrogen changes from a normal of some 12 or 15 milligrams per 100 c.c. of blood to as much as 50 or 100 or even more; that in nephritis where the creatinine content

*Chemistry of the Blood in Clinical Medicine.

goes above 5 milligrams per 100 c.c., the normal being about 1 to 2, more than 90 per cent of cases will die in a comparatively short time; that in tetany we sometimes find a decrease in calcium content of the blood from an average of from 9 to 11 milligrams per 100 c.c. to as little as 3.5 milligrams per 100 c.c., and that persistent and constant administration of calcium frequently relieves this disturbing condition. Knowledge of these and many similar chemical facts about the changes which the body fluids undergo has completely upset many traditional beliefs concerning the cause of disease and opened up new methods for cure.

In so brief a paper it will be impossible to cite all the ways in which you depend upon the chemists' work in your diagnosis. You know what they are. You know they are increasing at a fairly rapid rate, and he is a bold man indeed who will dare put limitations upon how far the chemist will go in fostering better methods of diagnosis and cure in the future.

In a recent address on "Chemistry in Relation to Biology and Medicine," Dr. John J. Abel says, "mastery of your science (chemistry) became necessary for the solution of physiological and pharmacological problems that could not be undertaken or even formulated if their chemical aspects were to be ignored." He further states, "no longer are the devotees of the biological and medical sciences foster-parents or foster-brothers of yours as in the old days! It is we (the physicians) who are now dependent in a large part of our work upon you and your fellow scientists, the physicists. The reason for this change in relationship is not far to seek. It lies, primarily in the fact that your science has developed many more devices and accurate methods of measurement."

It is mere truism to say that no sort of practice becomes truly scientific until it develops highly accurate methods of measurement. While the chemist's aid in diagnosis is of comparatively recent origin, the role he has played in treatment certainly has no earmarks of youth. From the beginning he has applied both his knowledge and his efforts to supplying the physician with remedial agents. Much of the very best chemical talent of the world is now deep in the problems of new remedials with results that are often marvelous. Much that you are able to do for the prevention, relief and cure of disease has come only after years of the most efficient and painstaking work of the chemist.

All of the foregoing is but preliminary to the two main concerns that I have in presenting this paper.

In the first place, the physician of the future will be much better prepared for service in his profession if, before he enters into training for it, even the premedical course, he is made to know from you men already out in practice that your own inability to use much that is extremely valuable in modern methods of diagnosis and treatment is due to the fact that your training in the fundamental sciences upon which much of it is based was not sufficiently broad and exacting. Not necessarily more time is required, but more profound application to the principles of Physics, Chemistry and Biology. We deprecate the attitude of many practitioners who boast that they never had any special training in these subjects and yet have been successful. A future physician, having imbibed such a spirit from a so-called successful physician before beginning the study of medicine, is almost damned before he starts. This Is Not Twenty-Five Years Ago.

The last and most important consideration is a plea for an even greater every day co-operation between the physician and the other scientific workers who have to do with the physical well-being of people. In this group the chemist has become an extremely important factor. And yet we find the two groups working more or less independent of each other, each performing a great service to the same end. In the very nature of the case, practicing physicians cannot go into the refinements of chemical procedure which is necessary for worthwhile results, nor can chemists utilize the many clinical manifestations which mean so much to the practiced physician, but it is my deliberate judgment that a genuine co-operation between the two groups would be a determining factor in the solution of many medical problems that now seem almost hopeless.

I venture to make a few suggestions for bringing about a better condition. I think they are practical.

(1) The Biochemistry course in Medical Colleges should have the most intimate sort

of relation with clinical medicine in all of its applications, the students actually seeing patients when practical. The teachers of this subject should be consultants in medicine in all problems involving chemical knowledge and should help in autopsies. Such a plan has been organized at the Medical College of Virginia.

(2) All medical groups should have a thoroughly trained chemist as full member of the staff. He may or may not be a physician, but should have a training in chemistry equivalent to that required of a Ph.D. in the subject. If I am correctly informed, no medical group in Virginia has such a man.

(3) Clinical laboratories should not be manned entirely by technicians who have been trained only in the method. At least one worker should be able to interpret results chemically.

Independent practitioners should arrange for co-operative work with chemists in one of the groups named above.

Summing up, then, this is distinctly an age of chemistry. Industry has realized it and is co-operating perfectly. Chemistry and Medicine are brothers in the healing art, but are not yet doing the fine team work that is justified by the slogan of modern chemistry, "Good Health, the ultimate aim of chemistry."

Medical College of Virginia.

FIVE YEARS' TREATMENT OF DIABETES WITH INSULIN.*

By E. G. HILL, M. D., Richmond, Va.

Five years have elapsed since the first dose of insulin was given, by Banting, to a human being. This boy is alive and able to earn his own living. He maintains a normal blood sugar, and his urine is sugar free on 27 units of insulin a day.

This is the proper time to look over the field and consider what has been accomplished in this five-year insulin period and what we may expect to accomplish in the future.

Joslin[1] has made a summary of the results of treatment of the different periods. He divided it into the Naunyn period which really was no treatment; the Allen period, the period of starvation, in which life was saved or rather prolonged; and, finally, the Banting or insulin period. He has only one diabetic child living out of sixty-one seen between August, 1898 and January, 1914,—98.4 per cent dead in what he terms the Naunyn period. He has 52 living out of 169 seen from January, 1914 to August, 1922, during what he terms the Allen or starvation period,—69.2 per cent dead. He has 147 living out of 165 seen from August, 1922 to September, 1926, during the Banting or insulin period,—only 10.2 per cent dead.

The diabetic death rate among children in Massachusetts has decreased from 11 per cent in 1900 and 10 per cent in 1910 to 3 per cent in 1926.

Thousands of diabetics are alive now who would have been dead but for insulin. Thousands of diabetics are living comfortable lives and earning their own living who would be hopeless invalids but for insulin. Thousands of operations have been performed on those rendered surgically safe by insulin and thousands of lives have thereby been saved. The economic value of human life and suffering saved by insulin is almost incalculable.

Those of us who have been practicing medicine twenty-five years, remember the despair and hopelessness with which we began the treatment of a case of so-called total diabetes. You might as well have signed his death warrant as to have told a man that he had diabetes. The best we could do was to restrict his carbohydrates, when most of them very promptly went into coma and all died. We had disturbed the ketogenic anti-ketogenic ratio. We had severed the last strand of the cord of life. Or else they had a leg cut off for gangrene and then died.

Will insulin cure? Insulin cures diabetes as food cures hunger. The disease can certainly be arrested and health restored by insulin. Marked improvement of tolerance and diminished need for insulin commonly take place as the beginning of treatment.

There seems to be a prejudice on the part of the public against insulin treatment; they think that if insulin is once taken its use must be continued indefinitely. This is not correct. Insulin should be given just as soon as the diagnosis of diabetes is established, and kept up as long as indicated.

John[2] gives a list of 58 diabetics whose carbohydrate tolerance had increased to such an extent that insulin was no longer needed to maintain the normal blood sugar level. The ages of this series are from 18 to 79 years. The duration of diabetes from recent to 15

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years. The periods since discontinuance of insulin were from one month to thirty-four months.

Diabetes affects the growth and weight in children. Insulin starts the growth again. Ladd[3] reports thirty-five cases of diabetes in children in which the growth process had slowed down or ceased altogether. The effect of insulin in these severe cases of diabetes may be noted as follows:

1. Immediate gain in weight;

2. Usually coincident gain in strength and improvement in disposition;

3. Gain in stature usually follows gain in weight.

J. R. Williams[4] reports that there is marked increase in food tolerance, body weight, and economic efficiency following the administration of insulin. Of 478 patients, 85 per cent are alive. There have been few deaths due to diabetes alone, where proper treatment was given. The tenure of life has been extended indefinitely.

Sansum[5] has recently advocated high carbohydrate feeding to diabetics. He gives increasing amounts of carbohydrates and then gives enough insulin to metabolize the carbohydrates. He claims that, by the use of high carbohydrate diets, he has found that:

1. There is no difficulty in keeping patients sugar free;

2. The patients are restored to a more nearly normal state of physical and mental activity;

3. They are freed from the slightest traces of the acetone type of acidosis;

4. The potatoes, milk and fruits have enabled us to eliminate the acid ash type of acidosis which we believe has been a cause of the high incidence of blood vessel disease;

5. The diets are more palatable;

6. The patients lose their craving for forbidden foods, especially for the carbohydrates;

7. Such diets should afford the patients the best opportunity for partial recovery.

Geyelin[6], of New York, has had good results in many cases where he has given increased amounts of carbohydrates and so has Richardson[7], of the University of Pennsylvania.

If we consider the value of carbohydrates in the metabolic process, we will see the need of an ample supply.

Rosenfield, in 1885, said, "The fats burn in the fire of carbohydrates."

Du Bois[8] says, "It has long been known that the complete oxidation of fat in the body could not be obtained unless some carbohydrates were being oxidized at the same time." When the available carbohydrate is insufficient, the organism "smokes" like a gasoline engine with an improper mixture. As a result, we have the formation of aceto-acetic and betahydroxybutyric acids—a ketosis. The symptoms of ketosis are well known; deep respiration, weakness, nausea, somnolence, coma. Diabetics and normal men on low carbohydrate diet show weakness, lassitude, inability to perform mental and physical labor and lack of resistance to infection.

Insulin not only metabolizes carbohydrates but causes them to be stored in the liver in the form of glycogen. The liver probably holds or contains from 200 to 300 grams of glycogen. Benedict could find 201 grams in his Lavanzin starvation case.

Vivian Hill,[9] of London, has shown that when a muscle contracts, the reaction Glycogen ——> Glucose ——> Lactic Acid takes place, to be followed in the recovery phase by the reaction Lactic Acid ——> Glucose ——> Glycogen.

Hill says "The primary fuel of muscle is carbohydrate, the essential element in the machinery is lactic acid, itself derived from carbohydrate." "We find the whole oxidative cycle of recovery is carried out at the expense of carbohydrate."

The supply of carbohydrate in the form of glycogen in the liver and muscles is only about 200 or 300 grams or about one day's supply. This explains why the carbohydrate starved diabetic complains of weakness and inability to perform muscular effort, and is dull, physically and mentally.

I have tried this increased carbohydrate and increased insulin on a number of patients, and their improvement has been remarkable. Their feeling of well being, their increased energy and "pep" have been very noticeable.

Frank, Northmann and Wagner, working in Minkowski's Clinic at Breslau, have isolated a guanidine derivative from herring spawn called agmatin. This substance was found to possess the insulin-like effect of lowering blood sugar. This substance known commercially as "Synthalin" is being tried out in several

clinics in this country. The reports are encouraging. In some cases it may partially replace insulin. The great advantage is that it is given by mouth.

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RELATION OF INFECTION OF THE BILIARY TRACT TO THE PATHOGENESIS OF DIABETES MELLITUS: THE AGE AND SEX FACTORS IN ONE HUNDRED DIABETIC PATIENTS.*

By L. E. STUBBS, M. D., Newport News, Va.

During the last three years the opportunity of observing a fair number of diabetics has presented itself. The conclusions drawn are based upon the study of the first one hundred diabetics presenting themselves for study and treatment.

I have been very much interested in arriving at some conclusions as to the etiology of the condition. The pathology is fairly well known and, since the advent of Insulin, the treatment of even the most severe cases has been much simplified. Despite our advance in knowledge of the condition it is on the increase and all efforts should be exerted in the prevention of the disease.

It occurred to me that a review of my case histories, which are complete, would yield some information as to the predisposing and exciting causes of the symptom complex.

The under-lying cause of diabetes is pancreatitis. Acute infectious diseases and hematogenous infections from distant foci of infection are of great importance in the causation of this pancreatitis. In this paper I will discuss only the relationship of infections of the biliary tract to pancreatitis, the under-lying pathological lesion of the disease.

Visher in a recent paper gives an excellent resume of the paths by which infections in the other abdominal structures may reach the pancreas. Quoting from his paper, "1. Infection may reach the pancreas from other organs by direct extension or by contiguity. This is possible, but it seems very improbable.

"2. Some writers assume that infection may spread through the lumen of the bile and pancreatic duets. Unless there is obstruction at the ampulla of Vater, it seems hard to believe that regurgitation of bile into the pancreas ever takes place.

"3. Infections of the abdominal viscera may reach the pancreas by spreading through the general blood stream. This undoubtedly occurs and is of some importance in the etiology of pancreatitis.

"4. Infections of the organs supplied by the portal vein may reach the liver via the portal circulation, there causing a hepatitis. Inflammation may then spread from the liver to the gall-bladder, bile ducts and pancreas.

"5. Infections may reach the pancreas from other abdominal viscera via the lymphatics. This route is emphasized by several writers and seems to me to be the most important."

Deaver has emphasized the rich lymphatic supply of the pancreas. Its vessels anastomose freely with those of the neighboring structures. The regional glands are the pancreatico-splenic, superior pancreatic, superior gastric, hepatic, pancreatico-duodenal, anterior and posterior mesenteric, mesocolic, inferior pancreatic and periaortic group of glands. The pancreas sends lymphatic branches to all of these which may anastomose with lymphatics from the stomach, duodenum, spleen, liver, gall-bladder, bile ducts and colon. There is an especially free anastomosis between the lymphatics of the duodenum, gall-bladder, bile ducts and those of the pancreas.

There is experimental and clinical evidence of the passage of infection from the liver, gall-bladder, etc., to the pancreas. Graham and Peterman observed that Prussian blue injected into the wall of the gall-bladder followed the lymphatics into the liver and also passed down the lymphatics of the common duct and into the pancreas. Conversely, infection may pass from the gall-bladder to the

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liver and thence to the pancreas. The same authors observed that injection of pathogenic bacteria into the portal vein causes a hepatitis, and the infection spreads from the liver to the gall-bladder, bile ducts and pancreas. There can be no valid reason against the spread of infection to the pancreas from infection of the duodenum, stomach, colon, appendix, prostate and infected hemorrhoids.

Clinically, Eustis has recorded 36 cases of alimentary glycosuria of which 41 per cent have shown gall-bladder disease, and 16.6 per cent evidence of true diabetes. Eustis also gives reports of five cases of glycosuria which were cured by treatment of cholecystitis in every case except one. Harris also reports two cases of diabetes resulting from pancreatitis, secondary to cholecystitis. There have been several cases of glycosuria with cholecystitis in the hospital with which I am associated which have cleared up after surgical treatment of the gall-bladder infection. Allen believes that removal of all foci, whether they be in the gall-bladder, appendix, tonsils or teeth, should be carried out in the prophylaxis or treatment of diabetes. He remarks that the significant lesion is a pancreatitis and all predisposing factors of such a condition should be removed. Rabinowitch concludes from his study that nine times as many patients had both cholecystitis and diabetes as would be expected were the two merely coincidental. The incidence of diabetes is greater with cholecystitis than with cholelithiasis.

I have gone over my series with special reference to the occurrence of symptoms suggesting very strongly disease of the biliary tract. Such symptoms as gas, distention, upper right quadrant pain have been made note of. The diagnosis of biliary tract disease is admittedly not positive since in none of the series has there been operative intervention to confirm the diagnosis; however, the clinical symptoms have been such as to make the clinical diagnosis of gall-bladder disease in addition to diabetes. In fact, in several of the patients the only deterring factor against advising operation has been the presence of diabetes. In the hundred patients there is a history of digestive disturbances very suggestive of biliary tract disease in thirty-eight. In only six of these have there been paroxysms of upper right quadrant pain. These figures indicate quite conclusively the frequent association between the occurrence of biliary tract disease and diabetes.

Surgeons have long recognized that inflammatory processes in the pancreas accompany cholecystitis as evidenced by the occurrence of glycosuria which disappears spontaneously with the subsidence of the causative pancreatitis. Still, as pointed out by Visher, progressive diabetes may result from cicatricial and degenerative changes long after the subsidence of the acute pancreatitis.

The influence of age on the occurrence of the disease is marked. Eight patients developed the disease between the ages of 10 and 20 years, 4 between 20 and 30 years, 2 between 30 and 40 years, 18 between 40 and 50 years, 42 between 50 and 60 years, 24 between 60 and 70 years, and 2 after 70 years. It appears that there is a gradual increase in the occurrence of diabetes with increasing age up to the age of 60. Beyond this point there is a decrease and especially after 65 years the decline is very acute, there being but 4 cases developing the disease after this age. By far the greater number occurred between the ages of 40 and 65 years—60 out of 100 cases. This accords with a recent report of Adams, who reports 1,000 patients observed at the Mayo Clinic. He finds that 593 of this number occurred after the age of 45.

The sex distribution in the 100 patients under consideration for all ages was 53 females and 47 males.

Among the 100 cases there were 70 whites and 30 negroes. This is a higher percentage among negroes than that usually given. It is to be noted that all of the negroes studied, except one, were from the better class and were relatively prosperous so that over-eating was perhaps a large factor in the occurrence of diabetes.

It has been emphasized by all writers on the subject that obesity plays a very important part in the causation of the disease. In my series this fact is very forcibly brought out in that 76 of the 100 patients were obese. All but one of these were markedly obese. Other writers report even a larger proportion, notably Joslin. It is certain that obesity plays a very important part in the predisposing etiology of the disease, a slighter exciting cause producing the disease than in the non-obese. It would seem that over-eating or obesity alone is an insufficient etiologic factor,

since exercise of a healthy organ usually causes hypertrophy rather than atrophy. Over-eating and obesity may predispose to constipation, colitis, cholecystitis and hepatitis and these in turn cause pancreatitis. Once the pancreas becomes infected, over-work by excessive ingestion of carbohydrates tends to aggravate this infection and clinical diabetes may result.

In passing, it is of interest to note that when diabetes does develop in those of normal weight it is more severe than in the obese. This probably represents a special predisposition to the disease and acute function with a resulting more severe type of disease.

Contrary to the prevailing opinion, my series shows but slight influence exerted by heredity as only six of the patients have a history of diabetes in their family. This is not because the factor of heredity has been neglected in taking the history, as a complete family history has been recorded on each patient and especially in those with diabetes.

SUMMARY.

1. The opinion is expressed that the underlying pathologic process in many cases of diabetes is pancreatitis.

2. A summary of the lymphatic connections of the pancreas with the other intra-abdominal organs is given.

3. Experimental and clinical evidence point to the spread of infection from other intra-abdominal organs to the pancreas with the production of a pancreatitis and in many cases a resulting glycosuria.

4. Study of the records of 100 diabetic cases observed showed definite clinical evidence of the presence of biliary tract disease in 38 or 38 per cent.

5. Diabetes is a disease that gradually increases in incidence with age up to 60, after which there is a sudden decline in frequency.

6. In the series under consideration it would seem to be more frequent in females than in males.

7. Obesity plays a very important part as a predisposing cause of diabetes.

CANCER OF THE RECTUM.*

By HARRY W. BACHMAN, M. D., Bristol, Va.

One person in ten, dying in middle life or past, dies of cancer. The subject of cancer is therefore one of commanding interest and universal appeal. Further reasons for this are found in that it spares no sex, age, or race, in the mystery that yet surrounds its causation, and in the all too frequent hopelessness of the situation it creates for its victim. No part of the alimentary tract, which is one of its common locations, is altogether free from its attack, although it is rare in that segment lying between the pyloric vein above and the termination of the ileum below. Its occurrence in the rectum in frequency is second only to that in the stomach. Fortunately, however, one cannot say that it is a disease commonly encountered in the daily routine of work. In over 1,000 complete clinical records of cases seen in a general surgical practice, I have observed cancer of the rectum but twice, and I know of but one other case that has been treated by a colleague in our hospital.†

The manner of its clinical occurrence may be illustrated by a brief resume of each of the two cases I have observed.

1. W. F. H., male, age 55. Admitted with complaint of pain in the hypogastrium and sacral region. Thirteen and one-half months previously, he suddenly became constipated to such an extent that he had to rely on the use of cathartics in increasing doses for each satisfactory bowel movement. Developing at the same time with his constipation was what may be described as a morning diarrhoea. Each morning, on arising, there would be a single passage of green watery material accompanied with mucus and blood. No other stools occurred without the use of a physic. His pain was said to have developed simultaneously with the above symptoms, and was described as a severe ache in the sacral region and hypogastrium. At times, he suffered with cramping sensations in the abdomen. Five months after the onset, anal protrusions appeared with the bowel movements, which caused a diagnosis of hemorrhoids to be made. He lost forty-eight pounds weight, and his strength rapidly waned. There was no venereal history, the Wassermann was negative, and he had had no previous illnesses of importance. Digital examination of the rectum showed, within easy reach of the finger, an annular lesion of the bowel with a lumen of less than 1 cm. The bowel was abnormally fixed in the contiguous tissues, there was marked albuminuria and pyuria, and numerous small lymph nodes were

*Read before the Clinch Valley Medical Society, at Norton, Va., April 29, 1927.

†Since this paper was written, another case has been encountered.

palpable in each groin. Through the proctoscope numerous easily bleeding more or less necrotic pedunculated projections were to be seen on the central margin of the lesion. On account of his marked weakness and the unfavorable local conditions attending the lesion with probable involvement of the urinary tract, the case was regarded as inoperable, in the terminal stage of carcinoma. The use of radium was declined, and two months later, at home, he died.

2. J. C. D., male, age 49. Family, marital, and previous medical history entirely negative. Chief complaint, loose stools with the passage of mucus and streaks of blood. He was in perfect health until three months before admission when he had suddenly developed what he believed to be a diarrhoea. At first, this had been attended simply with the passage of four or five loose stools each day, but after one week blood and mucus appeared in increasing amounts. At no time had he been constipated, he had had no pain, and he had lost no strength although his weight had declined perhaps ten pounds. At various times, he had consulted three physicians, one of whom had diagnosed "inflammation of the bowels", and the other two, hemorrhoids. No one of the three had examined the rectum. Examination showed within easy reach of the finger an insular lesion 5 or 6 cm. in diameter on the anterior wall of the rectum, not encircling the bowel. It presented an even granular surface which was elevated 5 or 6 mm. above the level of the normal mucosa. Bleeding on touch was very slight. The growth distinctly yielded a sensation of hardness to the examining finger. There was no tenderness, no fixation, no adenopathy, and no enlargement of the liver. Proctoscopic examination showed an otherwise normal mucosa up to 20 cm. above the anus. Venereal history and Wassermann reaction were negative. On March 4, 1927, immediately following his clinical examinations, a left iliac incision was made for the purposes of exploration and colostomy. I could feel no nodularity in the liver, no adenopathy in the meso-sigmoid, and the pelvic peritoneum seemed to be free from metastases. After seventy-two hours, the colostomy was opened, and two weeks later a radical posterior resection of the rectum, including a wide margin of skin around the anus, the sphincter muscles, the ischio-rectal fat and as much of the surrounding tissue as possible, was done. Eighteen days later, the patient was sent home with a rapidly closing wound in healthy condition. The operation had exposed the membranous urethra, prostate, bladder, seminal vesicles, and ureters, and by opening the peritoneum it was possible to bring down and remove four inches of sigmoid and its mesentery. Microscopically, the tumor was adenocarcinoma. No lymph-glandular involvement was found.

Rectal cancer, comprising about 4 per cent of all cancers, is most commonly seen between the age of 40 and 70. A review of several reported series of cases seems to indicate a slightly greater incidence in the male than in the female, in about the ratio of 55 to 45. According to a report by Eichoff covering 800 cases, the lesion arose in the ampulla in 60 per cent; in the anus, .3 per cent; in the pars perinealis, 7.3 per cent between the pars perinealis and the lower limit of the ampulla, 11.5 per cent; upper part of the ampulla, 11 per cent; while 6 per cent covered the entire rectum. Gant, in his text-book, locates 10 per cent in the anal canal, 50 per cent in the ampulla, which lies between the inferior and middle valves of Houston, 20 per cent in the upper rectum lying between the middle and superior valves of Houston, and 15 per cent above the superior valve of Houston or in the true recto-sigmoid. In its incipiency, every rectal cancer is limited to the mucosa. As with cancer elsewhere, its dissemination is by continuity and by contiguity, by way of the lymphatics, and through permeation into vascular channels. Fortunately, the lymphatics of the rectum are comparatively sparse, and pathological investigation and clinical experience have shown that extension of rectal cancer by continuity and by contiguity is of greater importance than spread by the lymphatics or by permeation into vascular channels (Turner). For this reason it is often strictly a local disease for comparatively a long time, and by the same token its early radical removal by surgical measures offers more hope than one can give in any other type of alimentary tract cancer. In 55 per cent of cases, the lesion is found to encircle the bowel completely, like a napkin ring, while in 44 per cent the lesion is a circumscribed or insular type of growth. The anterior wall seems to be involved by the insular lesion slightly oftener than the posterior wall. Microscopically, about 86 per cent of the lesions

are adeno-carcinoma, the colloid carcinoma coming next in frequency. Borders has demonstrated their varying degrees of malignancy can be accounted for, and the prognosis largely foretold, by the amount of cellular differentiation that is present in the tumor.

There is no thought more worthy of emphasis regarding the symptom and diagnosis of rectal cancer than this: That by actual clinical experience and measurments of specimens after operation, nine out of every ten cancers in the rectum are within reach of an examining finger and can be diagnosed by digital examination of the rectum. There are no early symptoms that are pathognomonic, but if every individual presenting rectal symptoms have at least a digital examination of the anal canal, but few cases of rectal cancer will be overlooked. Especially, though, should we suspect cancer in individuals of middle life or past who have blood and mucus in the stools, or who develop an unusual constipation. Frequently the blood and mucus are believed by the patient to indicate diarrhoea and he complains of "diarrhoea", or diarrhoea alternating with constipation. If there is much obstruction, cramping pains in the abdomen will occur. Piles are associated in 28 per cent of rectal cancers (Jacobs). At times, pain in the sacrum or perineum will be noted, or occasionally only pruritus ani, or tenesmus. Progressive weakness or loss of weight should always suggest the possibility of malignancy, and if we bear in mind that every patient is entitled to a thorough examination and that no examination is complete without an examination of the rectum, the cases that are overlooked will be few indeed.

The nature of the case once being known, what can be done for the condition? The answer is determined primarily by the presence or absence of demonstrable metastasis, and in a secondary sense by the willingness or unwillingness of the patient to accept a permanent artificial anus. It is unfortunate that sentiment is so strongly against the artificial anus. As a matter of fact, it seems to me that the physician is under an obligation in the majority of cases to urge his patient to accept it. It does not of itself shorten life, it can be made in such a way that many, in time, gain some degree of control over its action, and there are sanitary and comfortable appliances available for its care. It should be urged, however, for the following reasons especially: (1) It will relieve obstruction and the resulting toxemia. (2) It permits ulceration in the lesion to heal, and inflammation to subside. There is often striking improvement in the location condition of the cancer following colostomy. (3) Through the above action, or the action of radium, the case that seems at first to be inoperable may later be recognized as operable. (4) It permits exploration of the liver, mesosigmoid, pelvic peritoneum and retro-peritoneal pelvic lymph nodes, thus affording a fairly certain method of recognizing the cases frankly hopeless and therefore unsuitable for radical operation. There are but few instances indeed in which it is not justifiable as a palliative procedure, and even in the otherwise inoperable case it may prolong life to a remarkable degree. Furthermore, it is hardly a matter of debate any longer that any operation for the cure of rectal cancer which does not employ a permanent colostomy instead of the attempted restoration of the anus is a poor operation.

Numerous types of colostomy openings have been devised, yet only two seem to be practicable, and of the two I have no hard and fast ideas as to which is the better. That made through the left rectus has the advantage of better adaptability to the use of colostomy bag, while that made through a left iliac muscle splitting incision has the advantage of having a longer distal loop for subsequent removal and is perhaps less productive of danger of intestinal obstruction.

It is in the nature of things that any operation which can approach the ideal for the cure of cancer must do all of three things: It must destroy or remove the primary lesion in its entirety; it must remove every secondary deposit that does not involve the sacrifice of a vital function; thirdly, it must be accomplished by a technique that does not carry an unjustifiable risk to the life of the patient.

In cancer of the rectum the first proposition in the ideal—that of total extirpation of the primary lesion,—can be accomplished with a fair amount of ease. The second proposition predicates an accurate knowledge of the lymphatic system of the recto-sigmoidal segment, and connotes the removal of all tissue that may be involved through this system. Two groups of lymphatics are present in the rectum, the intramural and the extramural, as has been shown in a splendid study of the subject by W. E. Miles. The intramural network

runs chiefly in the submuscosa and is responsible for only a limited spread of the disease. The extramural group, however, as described by Miles, is extensive. From his study of the spread of rectal cancer, he described three zones in which secondary deposits occur. There is the zone of downward spread, comprising the anal skin, the external sphincter, and the ischio-rectal fatty area. The zone of lateral spread comprises the levatores ani, the retro-rectal lymph nodes lying in the hollow of the sacrum, the base of the bladder and seminal vesicles, or the vagina, cervix, and broad ligaments, and the lymph nodes about the internal iliac vessels. The zone of upward spread embraces the mesosigmoid in its entirety, the pelvic peritoneum, the lymph nodes at the bifurcation of the left common iliac, and the paracolic lymph nodes. Of these, the most important are the ischio-rectal fat, the levatores ani and the retro-rectal lymph nodes. My object in recounting the various structures is to show what an extensive procedure their removal, individually described by Coffee and by Miles as the abdomino-perineal method of resection, necessarily entails and the reason for the high mortality of this operation. Miles reports his own mortality at 18 per cent, and in the hands of less clever workers it must certainly be higher. There are cases in which the location of the growth is such that it cannot be removed without trans-abdominal attack, but in the large majority of cases the modern two stage posterior resection is, to my mind, a vastly safer operation and yields a greater total of post-operative years when the results in all cases treated by the two methods are comparatively considered.

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THE VALUE OF THE GRAHAM TECHNIQUE IN THE STUDY OF GALL-BLADDER DISEASE.*

By EDWIN A. MERRITT, M. D., Washington, D. C.

It is a far cry from the patient who is fair, fat and forty back to the embryo of that same individual and yet a reasonably satisfactory appreciation of gall-bladder function certainly involves some knowledge of embryology, together with the physiology and anatomy of the liver and biliary tracts. These subjects will therefore be briefly reviewed in order that we may have a better understanding of what is properly and popularly known as the Graham Gall-Bladder Technique, a contribution to diagnostic methods which certainly marks an epoch in Medicine.

EMBRYOLOGY OF THE GALL-BLADDER

When the head and tail folds of the embryo develop (about 2½ mm. or about twenty-eight days old) there are formed—both cranial and caudal to the spherical vitelline sack blind entodermal tubes—the fore-gut and hind-gut, respectively. The region between these intestinal tubes opens ventrally into the yolk-sack, which is sometimes termed the mid-gut. The fore-gut later forms part of the oral cavity and its further differentiation into the pharynx and its derivatives, and into the esophagus,

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the respiratory organs, stomach, duodenum, jejunum and portion of the ileum. From the duodenum arise the liver and the extra-biliary tracts, including the gall-bladder, and also the pancreas. The hind-gut, at the attachment of the yolk-sack, extends caudally to the cloaca into which the allantois opens. The hind-gut is differentiated into portion of the ileum, cecum, colon and rectum. The mid-gut or yolk-sack loses its connection with the entodermal tube in an embryo 7 mm. or about forty days old. Knowing the gall-bladder is developed from the same structure as the gastro-intestinal tract and is very similar in its histologic structure, we will not be surprised to find it possesses peristaltic movements which aid in evacuation of its contents. These are stimulated not by a nervous or psychic mechanism, but by a chemical stimulant or harmone. We shall discuss this under the physiology of the gall-bladder.

Anatomy of the Gall-Bladder

It is a conical, pear-shaped, musculo-membranous sack, lodged in a fossa on the under surface of the right lobe of the liver. It is from 7 to 10 cm. long, 2½ cm. in breadth, and holds 30 to 35 c.c., approximately one ounce. It is arbitrarily divided into a fundus, body and neck. The fundus is directed downward and projects beyond the anterior border of the liver. The body and neck are directed upward. The fundus is completely covered by peritoneum, and occasionally the entire organ is invested in a serous membrane forming a short mesentery and connecting it with the liver.

Its structure is of utmost importance. Since it is an off-shoot of the fore-gut, from which develops the gastro-intestinal tract, it has similar structure and also somewhat similar function to the gastro-intestinal tract (namely digestion of food).

Histologic Structure

1. *External Coat—Serous*, derived from the peritoneum.

2. *Fibro-Muscular Coat*, thin, strong layer forming the frame-work of the sack.

3. *Mucosa—Internal Coat*, which is elevated into minute rugae. The mucosa is continuous with the hepatic duct and also with the mucous membrane of the ducts of the liver, and through the common bile-duct with the mucous membrane of the duodenum. It is lined by columnar epithelium. The cystic duct from the neck of the gall-bladder joins the hepatic duct to form the common bile duct, which is about 4 cm. long. The common bile duct, formed by the junction of the hepatic and the cystic ducts, lies in front of the portal vein and to the right of the hepatic artery and in conjunction with the pancreatic ducts of Wirsung and Santorini, empties by a common orifice into the summit of the duodenal papilla on the medial side of the descending portion of the duodenum, known as the ampulla of Vater.

Physiology of the Gall-Bladder

The function of the gall-bladder is:

1. To serve as a reservoir for the bile;
2. To concentrate the bile;
3. Through its emptying, helps to emulsify and digest the fats.

When the gall-bladder is removed, the remaining extra-hepatic biliary tract dilates, showing the necessity for a reservoir for the storage of bile, and the importance of not removing the gall-bladder unless it is necessary. Sosman, in his studies on the function of the gall-bladder, found that fats by mouth cause the quickest and by far the most marked effects on the gall-bladder. Twenty minutes after the ingestion of fats and yolk of egg the normal gall-bladder will contract and practically empty itself. The gall-bladder empties on ingestion of fats, and such authorities as Howell, Halliburton, and Starling agree it is the result of a chemical or a harmone reaction. The gall-bladder does not empty by nervous mechanism, as was proven by the celebrated experiments of Pavlow on psychic effect on the digestive juices. Sosman also found that the psychic effect does not influence the gall-bladder. Neither does taste nor smell. Carbohydrates and proteins have no effect,—only fat seems to empty the gall-bladder, for it is only in fat metabolism that the bile is essential.

Drugs, such as atropine, pituitrin, and adrenalin by hypodermic had no effect. Mechanical factors, such as forced respiration, heat, and cold and a stimulation of the ampulla of Vater had little or no effects. Magesium sulphate by the duodenal tube has only a moderate effect on the emptying of the gall-bladder (which makes such treatment of diseased gall-bladders by the leading gastro-enterologists in the country rather doubtful). That the peris-

taltic contraction of the musculature of the gall-bladder greatly helps the gall-bladder to empty is agreed upon by all authorities.

Since the discovery by Dr. Leonard in 1898 that an opaque substance, such as bismuth, into the gastro-intestinal tract will throw a shadow, many investigators have been seeking some opaque material which, when injected into the blood, would be excreted by the liver together with the bile, and thereby throw a shadow on the plate of the gall-bladder.

Graham, *et al.*, began their work on the theory that if a non-toxic soluble substance, opaque to the X-ray could be given to a patient, it will be carried to the gall-bladder with the bile. Knowing that the gall-bladder concentrates the bile, Graham reasoned that certain time would elapse before a shadow of maximum density would appear. It is no wonder that the halogens presented themselves to him for consideration since so many of these salts are soluble, non-toxic and are so frequently used in medicine. Phenolphthalein of the phthalein groups was used in combination with the halogens. The first salt recommended was tetrabromphenolphthalein, which was found relatively toxic. The next salt recommended was tetraiodophenolphthalein, substituting the iodine for the bromine. Graham, Cole, Carman, Whitaker, and Williken found this salt to be satisfactory. The question of administration was rather an important factor, and it was found the dye could be given orally or intravenously. There is no doubt that the intravenous method is by far the surest, as the dye enters the blood stream directly, while if administered orally there are the chances of poor absorption of the dye, due to the non-solubility of the capsules. Experience has shown some of the capsules to pass out the gastro-intestinal tract without even being touched by the intestinal juices. Graham and Cole report 75 per cent accuracy by oral method and 97 per cent by the intravenous. The intravenous method, if properly administered, the technique of which we will discuss later, gives as little if not less reaction than the oral. Now it is reasonable to conclude, since the dye gets into the gall-bladder with the bile excreted by the liver, that if no shadow appears, three disturbing factors are possible: 1. The liver may be too badly diseased to secrete bile, whatever the disease may be due to,—cirrhosis, abscess, etc., 2. There may be an occlusion in the extra-hepatic biliary tract before it reaches the cystic duct or occlusion of the cystic duct, either by inflammation or by stones; 3. There may be a disturbance of the function of the gall-bladder.

We not only have accurate means of studying disease of the gall-bladder but also the function of the gall-bladder can be studied. Its size, shape, contour, and time of evacuation, position, adhesions, and stones may be studied by this method.

This test very often enables us to determine only slight variation from the normal, and by making early diagnoses the gall-bladder can be removed and the patient relieved of symptoms. The Graham test has become routine in all of the large clinics in America.

The diagnosis of a diseased gall-bladder without this test is one of the most difficult the profession has to cope with, as most of you know, since its vague symptomatology, particularly in the early stage, simulates so many other gastro-intestinal diseases. When the Graham test shows the gall-bladder to be diseased, and our experience in over a thousand cases has borne this out to be true, and the patient comes to operation and the surgeon decides on macroscopic examination that the gall-bladder is normal, the radiologist is justified in having the gall-bladder extirpated if he can persuade the surgeon to do so, and upon microscopic examination the gall-bladder will be found pathological in 98 per cent of the cases.

We have observed in our laboratory that the dye acts as an oxytoxic particularly in females where the menstrual period is not far off. Its use, therefore, in any stage of pregnancy is for this reason contraindicated.

Technique

Drug Used: Tetraiodophenolphthalein in an aqueous solution intravenously. If the patient weighs 23 lbs., 3.5 grams are given, and, if less, the dose is reduced to 3 grams. The drug is dissolved in 30 c.c. of redistilled water and sterilized over a water bath for fifteen minutes.

Great care should be exercised in giving the solution intravenously since it sets up a violent irritation when injected directly into the tissues. It is our custom to use only re-sharpened needles but in all other respects the technique is identical with the usual intravenous procedure.

The patient reports in the morning without having had any food since the preceding evening meal.

Following the injection, which is given slowly by the gravity method, the patient reclines for a few minutes and is then permitted to depart, returning for the 5, 8, and 24-hour roentgenograms, with instructions to take only a glass of milk after the first and second roentgenograms, and a full meal is permitted following the third, and usually last. In rare cases a fourth film is made on the following morning if the other three examinations are not conclusive.

Roentgen Technique

This is not unusual, but a fixed routine is employed in each case, in that the position of the first film with reference to the patient's body is marked on the body so that subsequent films will show the gall-bladder in an identical location. Also, the various factors employed in making the initial film are recorded and duplicated in making subsequent examinations. This results in roentgenograms which show a uniform density, with the gall-bladder (if shown) occupying the same position on all three or four films.

Summary

The examination is indicated in practically all subjects when symptoms point directly or indirectly to gall-bladder disease and when no severe constitutional disease is present.

The dye may be given intravenously or *per os*, but the former is productive of the best results.

1909 *Massachusets Avenue, Northwest.*

THE TREATMENT OF ECLAMPSIA WITH MAGNESIUM SULPHATE.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

In the modern treatment of eclampsia as developed by Straganoff, Tweedy, McPhearson and others, the chief aim is the control of the convulsive seizures. Of course other measures, such as the forcing of fluids to increase the activity of the kidneys, the giving of digitalis to guard against heart collapse, and the posture of the patient to avoid aspiration of material into the larynx and bronchi, are important, but in the presence of the emergency of repeated convulsions they are of secondary importance. The chances of recovery of the mother varies inversely with the number of fits, and our first concern should be to stop the fits as quickly as possible. Loud noises, bright lights, and unnecessary disturbance of the patient should be prohibited. Straganoff goes to the extreme of giving a little chloroform before administering a hypodermic. It is certainly not too much to ask that the hypodermic needles be sharp. Many drugs have been advanced for the control of the spasms; viz.: morphin, chloral hydrate, sodium bromide, paraldehyde, to mention a few that are most widely used. In 1925, Lazard reported his results with the use of magnesium sulphate intravenously, and in the same journal (*Am. J. Obst. & Gynec.*, Feb., 1925) Lincoln and Alton reported a small series of eclamptics treated with magnesium sulphate intradurally. Dorsett (*Am. J. Obst. & Gynec.*, 11:227, 1926) of St. Louis has treated with considerable success a series of cases by intramuscular injection of this remedy.

My own experience with magnesium sulphate began when the journal containing Lazard's first article came out. Dr. Hooker asked me to see a case of antepartum convulsions with him at the Memorial Hospital. We controlled the convulsions fairly well with morphin, chloral, bromides, etc., until the delivery. The convulsions, however, returned after delivery and the usual remedies failed completely. As a last resort, we decided to try magnesium sulphate intravenously. The result was so dramatic that its use has been continued.

I have for your consideration forty-six cases of eclampsia which fall into two groups. In group I (cases 1 to 33 inclusive) are the cases treated at the Memorial and St. Philip Hospitals. In this connection, I have to thank Dr. J. E. Rucker who has had charge of most of these patients and who has kindly abstracted their histories. Most of them are "neglected" cases that have had no treatment until after convulsions have begun. Many were brought in by the city ambulance with no history of the number of convulsions. They have been treated by various members of the staff, and the treatment has varied somewhat in such details as the preparation of digitalis used, the use of colonic irrigations, and the use of glucose, etc. The essentials of the conservative treatment have, however, remained unchanged. It is interesting to notice how the magnesium sulphate treatment has spread among the members of the staff.

*Read at the meeting of the Church Hill Medical Society, May 13, 1927.

Group II (cases 34 to 46) is composed of private cases seen in consultation. In practically all of these cases the prodromal symptoms were recognized and treatment was begun before the onset of the convulsions. In this group are included three cases treated at the Johnston-Willis Hospital by Drs. Johns, Wingfield and Carter, and my thanks are due these gentlemen for permission to report their cases.

In other words, I am including in this report all the cases of eclampsia that have been treated at the Hospital Division of the Medical College of Virginia and at the Johnston-Willis Hospital since my first case treated with magnesium sulphate and all the cases I have personally treated elsewhere. Had I selected only the cases who received magnesium sulphate I would have excluded the two maternal deaths, but, in order to avoid any criticism of selecting the cases for treatment with the new remedy, I have included all. As a matter of fact, what selection there has been has been unfavorable to the magnesium sulphate treatment. The patients who did not receive this remedy were either the patients of doctors who preferred some other method of controlling the convulsions or else were patients who ceased having convulsions soon after entering the hospital. Many of the mild cases belonged to this latter class.

Summary of Cases

Case 1. Mrs. P. P., white, 24, I-para, admitted to Memorial Hospital 3-22-25 after her first convulsion. Blood pressure on admission was 160/100. Urine contained a heavy trace of albumin, hyaline and granular casts. She was given .065 gm. morphin, 300 c.c. of 10 per cent glucose solution intravenously, high colonic irrigations, gastric lavage and 7.5 c.c. paraldehyde. She delivered herself of a live female baby after the 13th convulsion. Half an hour later she had another convulsion. She was then given 20 c.c. of a 10 per cent solution of magnesium sulphate intravenously. Patient rapidly regained consciousness. There were no more convulsions. Discharged 3-28-25.

Case 2. M. S., colored, 18, I-para, admitted to St. Philip Hospital 3-28-25 after her 1st convulsion. On admission there was edema of feet. Blood pressure was 145/90. Patient was somewhat irrational. Urine contained an abundance of albumin, granular and hyaline casts. Treatment consisted of morphin .016 gm. q. 4 hours, tincture digitalis, high colonic irrigations and gastric lavage. She delivered herself of a girl baby that died on 3d day. The mother was discharged 4-9-25 in good condition.

Case 3. B. S. colored, 22, I-para, admitted to St. Philip Hospital 4-9-25 with history of headache, visual disturbance, edema, and two convulsions. On admission she was irrational. Blood pressure was 140/110. Urine showed a good trace of albumin. No casts. Patient had her third convulsion after getting to the hospital. Treatment consisted of morphin .016 gm. q.4 hours, tincture digitalis, sodium bromide 1.95 gm., gastric lavage, and high colonic irrigation. Delivered of a living baby. Discharged 4-26-25.

Case 4.—E. S., colored, 17, unmarried, I-para, admitted to St. Philip Hospital in convulsions, blood pressure 168/112. Urine contained a quantity of albumin, sugar, hyaline and granular casts. She had 9 convulsions in 12 hours before delivery of a still-born male, and one convulsion afterwards. Treatment consisted of morphin .032 gm., tincture digitalis, 400 c.c. of blood was removed and replaced with 500 c.c. of a 20 per cent glucose solution. Morphin .016 gm. q. 4 hours, and 20 c.c. of a 10 per cent solution of magnesium sulphate was given after her 5th convulsion. 300 c.c. of blood were removed and 400 c.c. of 20 per cent glucose solution were given and finally a second intravenous dose of 20 c.c. of a 10 per cent solution of magnesium sulphate was given. Discharged in good condition 5-24-25.

Case 5. L. B., colored, 19, unmarried, I-para, admitted to St. Philip Hospital in convulsions. Blood pressure 158/96. Urine contained abundance of albumin and acetone, hyaline and granular casts. Treatment consisted of sodium bromide, chloral hydrate and high colonic irrigations. The patient had 2 convulsions after admission and delivered herself of a still-born female infant. She was discharged in good condition 5-16-25.

Case 6. M. S., colored, age 19, I-para, admitted to St. Philip Hospital 6-23-25 after her 1st convulsion. Blood pressure was 160/80. Urine contained a trace of albumin, hyaline and granular casts. Treatment consisted of morphin .016 gm., tincture digitalis, chloral hydrate .65 gm., sodium bromide .65 gm., high colonic irrigations and gastric lavage. After her 4th convulsion in the hospital she was

given 20 c.c. of 10 per cent magnesium sulphate. She had 6 more convulsions and was given 15 c.c. of 10 per cent magnesium sulphate. There were no more convulsions. She had a transverse presentation and was delivered of a still-born boy by version and extraction. Discharged 7-2-25 with a blood pressure of 175/105.

Case 7. M. C., colored, age 17, I-para, admitted to St. Philip Hospital 7-16-25 having post-partum convulsions. Blood pressure was 155/60. Urine was negative. She had 3 convulsions in 4 hours after delivery, when she was given 20 c.c. of 10 per cent magnesium sulphate. Patient had 2 more convulsions. Besides the magnesium sulphate, the treatment consisted of morphin .01 gm., q. 4 hours, tincture digitalis, and an occasional dose of sodium bromide and chloral hydrate. Discharged 7-29-25.

Case 8. E. G., colored, age 17, I-para, admitted to St. Philip Hospital 7-24-25 in convulsions. Blood pressure was 220/120. Urine contained albumin and granular casts. Treatment consisted of morphin .016 gm., q. 4 hours, and high colonic irrigations. After her 7th convulsion, she was given 20 c.c. of 10 per cent solution of magnesium sulphate. There were no more convulsions. Patient delivered herself of a still-born child 7-26-25. Dischaged 8-6-25 in good condition.

Case 9. E. W., colored, age 36, V-para, admitted to St. Philip Hospital 10-2-25 on account of convulsions. Blood pressure was 220/40, general edema. Urine contained albumin, acetone and granular casts. She had no convulsions in the hospital. Treatment consisted of morphin .016 gm. q. 4 hours, tincture digitalis and sodium bromide. Labor was induced. Still-born baby. Patient was discharged in good condition 10-27-25.

Case 10. Mrs. S. M., age 36, multipara, admitted to the Memorial 11-29-25 in convulsions. Blood pressure was 240/140. Urine contained abundance of albumin, hyaline and granular casts. Treatment consisted of morphin .032 gm., followed by doses of .016 gm. every 2 to 3 hours, high colonic irrigations and venesection. Patient delivered herself of a 6123 gm. still-born male infant. After delivery there was marked pulmonary edema. Patient died 11 hours after admission to the hospital.

Case 11. C. T., colored, age 18, I-para, admitted to St. Philip Hospital 1-25-26 in coma. Blood pressure was 138/110. Urine contained abundance of albumin, hyaline and granular casts. Treatment consisted of morphin .016 gm., q. 4 hours, chloral hydrate 2.1 gm., sodium bromide 2.1 gm., tincture digitalis 3.75 c.c., hyoscin .00065 gm., venesection of 300 c.c., followed by 200 c.c. of 20 per cent glucose solution intravenously. The patient had 12 ante-partum convulsions after entering the hospital and 3 post-partum ones. After her 2d post-partum convulsion, she was given 20 c.c. of a 10 per cent magnesium sulphate solution intravenously. The baby was a still-born male. Patient was discharged 2-26-26.

Case 12. S. H., colored, age 21, I-para, admitted to St. Philip Hospital 2-18-26 in convulsions. Blood pressure 135/90. Urine contained an abundance of albumin, acetone, hyaline and granular casts. Treatment consisted of morphin .01 gm. q. 4 hours, tincture digitalis, high colonic irrigations, 5 c.c. of 25 per cent of magnesium sulphate intramuscularly on second day, chloral hydrate and sodium on 3d day. The patient had 4 ante-partum convulsions in the hospital and 20 post-partum convulsions. Spontaneous delivery of a live boy. Both patients left the hospital in good condition 3-12-26.

Case 13. M. B., colored, age 18, I-para, admitted to St. Philip Hospital 4-20-26 after her 3d convulsion. Blood pressure was 180/100. Edema. Urine contained a good trace of albumin and granular casts. Treatment consisted of morphin .016 gm. q. 4 hours, venesection (500 c.c.) and 200 c.c. of a 20 per cent glucose solution intravenously. Venesection and glucose repeated 10 hours later, luminal .098 gm., digitalone 1 c.c. q. 4 hours, and high colonic irrigation. Patient delivered herself of a live boy after her 10th convulsion. Baby died in the hospital. Patient discharged in good condition 5-5-26.

Case 14. M. S., colored, age 21, unmarried I-para, admitted to St. Philip Hospital 5-24-26 in convulsions. Blood pressure was 210/104. Urine contained abundance of albumin and casts. She had 6 convulsions in two hours after admission. Twenty c.c. of 10 per cent solution of magnesium sulphate were given intravenously. She had a convulsion 6 hours later and delivered herself of a still-born infant 12 hours after admission. Besides the magnesium sulphate, treatment consisted of

morphin .032 gm. on admission, colonic irrigations, morphin .016 gm. q. 4 hours, digitalone 2 c.c. q. 6 hours. Discharged 6-13-26.

Case 15. E. P., colored, age 36, multipara, admitted to St. Philip Hospital in convulsions. She had pulmonary edema. Blood pressure was 230/130. Urine contained albumin and acetone. Treatment consisted of morphin .016 gm. q. 4 hours, digitalone 1 c.c. q. 4 hours, high colonic irrigations, caffein and sodium benzoate .195 gm. q. 4 hours. Patient had two convulsions after entering hospital, delivered herself of a still-born male infant, and died 24 hours afterwards.

Case 16. R. S., colored, I-para, admitted to St. Philip Hospital 6-24-26 after her first convulsion. Blood pressure was 140/67. Urine contained abundance of albumin, hyaline and granular casts. She had 6 convulsions inside of 2 hours after entering the hospital. She was then given 20 c.c. of a 10 per cent magnesium sulphate solution intravenously. She had 3 convulsions in the next 4 hours; 15 c.c. of a 10 per cent magnesium sulphate solution were then given. In the next 24 hours she had 3 convulsions. She delivered herself of living twins. Two days after delivery, she had 3 more convulsions and was given 20 c.c. of 10 per cent magnesium sulphate solution. Twelve hours later she had 2 more convulsions. Besides the magnesium sulphate, treatment consisted of morphin .016 gm. p.r.n., tincture digitalis 9.4 c.c., chloral hydrate 1 gm., and sodium bromide 1 gm., daily, for 3 days. Patient was discharged in good condition 7-9-26.

Case 17. A. C., colored, age 16, unmarried. I-para, admitted to St. Philip Hospital 7-26-26. She was delivered in her home and had a convulsion 1 hour later and several more before she was gotten to the hospital. Blood pressure was 160/100. Urine contained abundance of albumin and granular casts. She was given 20 c.c. of a 10 per cent magnesium sulphate solution on admission. In the next 2 hours she had 5 convulsions. She was then given 5 c.c. of a 10 per cent solution intravenously. In the next 12 hours, she had 2 more convulsions, and 4 c.c. of 10 per cent magnesium sulplate solution were given intravenously. No more convulsions. Other treatment consisted of morphin .016 gm. on admission and .01 gm. p. r. n., chloral hydrate and sodium bromide by rectum q. 4 hours for 2 days. Twelve hours after admission, she was given a pint of water and 7.5 c.c. tincture digitalis through a nasal tube. This was repeated 5 times at intervals of 6 hours. Discharged in good condition 8-8-26.

Case 18. F. L., colored, age 22, I-para, admitted 8-4-26 in convulsions. Blood pressure was 230/120. The urine contained an abundance of albumin and granular casts. Patient had 8 convulsions in the first 1½ hours in the hospital. She was given 20 c.c. of a 10 per cent magnesium sulphate solution. There were no more convulsions. Other treatment consisted of morphin .032 gm. on admission, sodium bromide and chloral hydrate for 3 days, tincture digitalis 7.5 c.c., and 1,000 c.c. of water through a nasal tube every 8 hours until the patient could swallow. Twenty-four hours after admission, venesection was done to relieve edema of the lungs. On the third day labor was induced with a bougie and a six months' still-born fetus delivered. The patient was discharged in good condition 9-15-26.

Case 19. A. M., colored, age 17, I-para, admitted to St. Phiilip Hospital 9-1-26 having post-partum convulsions. Blood pressure was 180/100. Urine contained albumin, hyaline and granular casts. After her second convulsion in the hospital she was given 20 c.c. of a 10 per cent solution of magnesium sulphate. There were no more convulsions. Other treatment consisted of morphin .016 gm. on admission, bromide and chloral, tincture digitalis, and water by nasal tube. Discharged 9-15-26 in good condition.

Case 20. M. J., colored, age 22, I-para, admitted to St. Philip Hospital 10-1-26 after her sixth convulsion. Blood pressure was 122/80. The urine contained abundance of albumin, hyaline and granular casts. No convulsions after admission. She delivered herself of a still-born baby on third day. Treatment consisted of tincture digitalis, bromide and chloral and water by nasal tube. Magnesium sulphate (20 c.c. of 10 per cent solution) was given intravenously for muscular twitching 24 hours after admission. Discharged 10-17-25 in good condition.

Case 21. Mrs. L. I., 35 years of age, multipara, admitted to Memorial Hospital 10-21-26 in convulsions. Her convulsions started 6 days after delivery. Blood pressure was 182/80. Urine contained a good trace of albumin, hyaline and granular casts. Treatment consisted of 20 c.c. of magnesium sulphate solution in-

travenously ½ hour after admission. No further convulsions. She was given morphin, sodium bromide and luminal. Discharged in good condition 10-31-26.

Case 22. Mrs. M. E., age 18, I-para, admitted to the Memorial Hospital 12-6-26 after her second convulsion. Three hours after admission she had 3 convulsions. Six hours after she was given 20 c.c. of a 10 per cent magnesium sulphate solution intravenously. Two hours later she had 2 convulsions. Twelve hours after admission she had her 8th convulsion. Twenty c.c. of magnesium sulphate (10 per cent solution) were now given intravenously. An hour later she had a spontaneous delivery of a living infant. Blood pressure on admission was 130/80. Urine contained hyaline and granular casts and an abundance of albumin. Other treatment consisted of morphin .016 gm. and q. 4 hours p.r.n. chloral hydrate and sodium bromide, 1,000 c.c. of water by nasal tube b.d. and tincture digitalis. Discharged in good condition 12-16-26.

Case 23. L. H., colored, 17 years, unmarried, I-para, admitted to St. Philip Hospital 12-6-26 in convulsions. She had 1 ante-and 1 post-partum convulsion in the hospital. She was then given 20 c.c. of 10 per cent magnesium sulphate solution intravenously. No more convulsions. Urine contained albumin but no casts. Treatment consisted besides the magnesium sulphate, of morphin, bromide and chloral, water by mouth and high colonic irrigations. Both patients discharged in good condition 12-20-26.

Case 24. M. L., colored, age 40 years, multipara, admitted to St. Philip Hospital 12-31-26 in convulsions. Blood pressure was 190/120. Urine contained abundance of albumin, hyaline and granular casts. She was given 20 c.c. of magnesium sulphate (10 per cent solution) intravenously after her second convulsion in the hospital. She had one convulsion ½ hour afterwards. Other treatment consisted of morphin .016 gm. on admission and q. 4 hours p.r.n., tincture digitalis and water (1,200 c.c.) through nasal tube q. 8 hours, bromide and chloral per rectum, and high colonic irrigations. The patient delivered herself of a still-born infant. She left the hospital in fair condition.

Case 25. M. J., colored, age 35 years, multipara, admitted to St. Philip Hospital 2-5-27 with headache and visual disturbances. She had convulsions at 3 previous deliveries. Blood pressure was 190/130. Urine contained hyaline and granular casts and albumin. Labor was induced and there was a breech delivery of a premature living male. Immediately after delivery the patient had one convulsion and was given 20 c.c. of a 10 per cent magnesium sulphate solution intravenously. Other treatment consisted of morphin chloral and bromide, tincture digitalis and colonic irrigations. Both patients were discharged in good condition 2-23-26.

Case 26. Mrs. M. W., age 17, I-para, admitted to the Memorial Hospital 2-8-27 in convulsions. Blood pressure was 150/100. Urine contained hyaline and granular casts and albumin. She was given 20 c.c. of 10 per cent magnesium sulphate solution intravenously after the first convulsion in the hospital. She had no more convulsions for 6 hours. Then in the next 24 hours, she had 5 convulsions. She was delivered with forceps 30 hours after admission. Other treatment consisted of morphin, chloral hydrate, sodium bromide, tincture digitalis, gastric lavage, castor oil, water by nasal tube and colonic irrigations. Both patients discharged 2-28-27.

Case 27. R. J., colored, age 17, I-para, admitted to St. Philip Hospital 2-26-27 in convulsions. Blood pressure was 200/90. Urine contained albumin, hyaline and granular casts. After her 4th convulsion in the hospital, she was given 20 c.c. of 10 per cent solution of magnesium sulphate intravenously. There were no more convulsions. The patient delivered herself of a live male child 30 hours after admission. Other treatment consisted of morphin, .022 gm. on admission, tincture digitalis, castor oil, water by nasal tube, bromide and chloral and high colonic irrigations. Both patients were discharged in good condition 3-12-27.

Case 28. Mrs. T. R., age 20, I-para, admitted to the Memorial Hospital 3-6-27 in convulsions. Blood pressure was 160/100. Urine contained albumin, hyaline and granular casts. Ten c.c. of a 10 per cent solution of magnesium sulphate were given intravenously. A bag was then inserted. In the next 5 hours patient had 5 convulsions. The magnesium sulphate was repeated in the same dosage. There were 3 more convulsions in the next ½ hour. The patient delivered herself of a still-born infant and there were no more convulsions. Other

treatment consisted of morphin, chloral hydrate, sodium bromide and digitalone. Patient was discharged in good condition 3-15-27.

Case 29. Mrs. M. B., age 23, I-para, admitted to the Memorial Hospital 4-3-27. She had been having post-partum convulsions for 12 hours before admission, and continued having them until 20 c.c. of a 10 per cent magnesium sulphate solution was given intravenously. Blood pressure was 170/120. Urine contained abundance of albumin, hyaline and granular casts. Other treatment consisted of 300 c.c. of 10 per cent glucose solution intravenously, morphin, sodium bromide, chloral hydrate and colonic irrigations. She was discharged in fair condition 4-7-27.

Case 30. Mrs. E. L., age 29, I-para, admitted to the Memorial Hospital 4-29-27 with the history of headache, edema and visual disturbances. Three days after admission she had a convulsion. Blood pressure was 180/112. Urine contained albumin, hyaline and granular casts. Treatment consisted of venesection on admission and high colonic irrigations. When she had the convulsion, she was given morphin, sodium bromide, chloral hydrate and tincture digitalis. A bag was then inserted and the patient delivered herself of a premature infant that died on the second day. The mother was discharged in good condition.

Case 31. C. M., colored, age 17, I-para, admitted to St. Philip Hospital 4-13-27 after her 7th convulsion. Forceps had failed in her home. The patient had 2 more convulsions while the magnesium sulphate was being prepared. She was given 20 c.c. of a 10 per cent solution intravenously. The patient had her 11th convulsion as she was being put on the table. The head, greatly moulded, was in a transverse position and delivered with Kielland forceps without an anesthetic. She had her 12th convulsion as she was being put to bed. Her convalescence was febrile. Both patients were discharged in good condition 5-8-27.

Case 32. Mrs. P. R., age 24, I-para, admitted to the Memorial Hospital 6-1-27 in labor. Blood pressure was 180/120. Urine contained an abundance of albumin, hyaline and granular casts. She had one convulsion before she delivered herself of a normal male baby, none afterwards. Treatment consisted of morphin, sodium bromide, chloral hydrate, tincture digitalis and high colonic irrigations. Both patients discharged in good condition 6-15-27.

Case 33. Mrs. P. H., age 32, multipara, admitted to the Memorial Hospital 6-9-27, having post-partum convulsions. Patient had one convulsion after entering the hospital. Blood pressure was 130/90. Urine contained an abundance of albumin, hyaline and granular casts. Treatment consisted of 20 c.c. of a 10 per cent solution of magnesium sulphate intravenously, morphin, bromide and chloral, high colonic irrigations, water and tincture digitalis by nasal tube. Discharged in good condition 6-15-27.

Case 34. Mrs. P. I. C., age 24, I-para, admitted to Johnston-Willis Hospital 4-23-25 with a severe headache, marked albuminuria and a systolic blood pressure of 205. She had her 1st convulsion as she was being put to bed. The perineum was bulging. She was anesthetized with ethylene and delivered with low forceps. The patient had 2 post-partum convulsions. Treatment consisted of morphin .016 gm. (3 doses). Between the 2d and 3d convulsion, she was given 6 c.c. tincture digitalis, .65 gm. each of bromide and chloral, and a liter of water through a nasal tube. After her 3d convulsion, she was given 20 c.c. of a 10 per cent solution of magnesium sulphate intravenously. Within an hour her mind was perfectly clear and she wanted something to eat. The baby died in a few hours. The mother made an uneventful recovery and left the hospital in good condition 4-30-25.

Case 35. Mrs. C. T. A., age 22, I-para, was admitted to Johnston-Willis Hospital 6-13-25 having post-partum convulsions. She entered the hospital after her 7th convulsion. Blood pressure was 135/90. Urine contained a quantity of albumin. The patient was given .016 gm. of morphine on admission and 20 c.c. of a 10 per cent solution of magnesium sulphate. She had no more convulsions, her mind cleared up rapidly and she returned home to her baby 24 hours later.

Case 36. Mrs. C., age 38, VI-para, admitted to the Retreat for the Sick 9-6-25, on account of ablatio placenta with extreme toxemia with practically no vision, and blood pressure 150/-110. Urine boiled almost solid but contained no casts. The amniotic sac was ruptured and the cervix and vagina were packed with gauze. The patient delivered herself of a macerated fetus. There was anuria for 30 hours after delivery. On the 6th day post-partum, she had

2 convulsions within ½ hour. She was given 20 c.c. of 10 per cent solution of magnesium sulphate. There were no more convulsions. The patient left the hospital with considerable impairment of vision 9-20-25.

Case 37. Mrs. C. L. W., age 19, I-para, admitted to Johnston-Willis Hospital 9-7-25, on account of toxemia of pregnancy. Urine showed albumin and many granular casts. Cesarean section was done by Dr. Johns under ethylene. Patient had a post-partum convulsion, and was given 20 c.c. of 10 per cent solution of magnesium sulphate. She immediately regained consciousness and asked for water. There were no further complications. Both mother and child left the hospital in good condition 9-26-25.

Case 38. Mrs. C. P., age 23, I-para, admitted to the Retreat for the Sick 10-1-25 on account of toxemia of pregnancy. Blood pressure was 200/140. Urine boiled almost solid. The vagina was packed with gauze. Early the next morning, she had 2 convulsions. She was given .016 gm. of morphin and an intravenous injection of 20 c.c. of a 10 per cent solution of magnesium sulphate. Four hours later she had her 3d convulsion, and 9 hours later, her 4th convulsion. The magnesium sulphate was repeated in a 15 c.c. dose. There was now considerable pulmonary edema. Patient was bled 800 c.c. A 4082 gm. still-born baby was delivered with forceps without an anesthetic. Recovery was uneventful and the patient left the hospital 10-14-25.

Case 39. Mrs. R. K. G., age 25, I-para, admitted to the Johnston-Willis Hospital 12-13-25. Urine showed a distinct trace of albumin but no casts. She had 2 convulsions after entering the hospital. Patient was given 20 c.c. of 10 per cent magnesium sulphate solution intravenously and was delivered with low forceps. Eight hours after delivery she was given 1 ampule of pituitrin on account of a rather free flow and immediately had a severe convulsion. In addition to the magnesium sulphate, she was given .032 gm. of morphin, digifolin .098 gm. q. 4 hours, sodium bromide and chloral hydrate, each .65 gm., at bedtime for several nights. Both patients were discharged in good condition 12-24-25.

Case 40. Mrs. C. E. F., age 29, VIII-para, was sent into the Johnston-Willis Hospital 3-3-26 on account of marked albuminuria, headache and blind spells. Blood pressure was 220/140. She had her 1st convulsion in the elevator. She had already been given .016 gm. of morphin and a dose of sodium bromide. She was given another .016 gm. of morphin, 3.75 c.c. tincture digitalis by mouth and 7.5 c.c. paraldehyde by bowel. One and a half hours later, she had her 2d convulsion. She was then given 15 c.c. of 10 per cent magnesium sulphate solution intravenously. Twenty minutes later, the patient's mind was much clearer and she said she could see better. She felt as if she were burning up and could not get enough water. There were no more convulsions. The patient delivered herself the next day. Both patients left the hospital in good condition 3-16-26.

Case 41. E. H., age 17, unmarried. I-para, admitted to the Spring Street Home 4-11-26. For 3 weeks before she was confined, her systolic blood pressure was 160 in spite of rest in bed, a low protein diet and frequent purgations with castor oil. On May 30, she began to bleed from vagina and was packed with gauze and given 1 gm. of quinine. Ten hours later the packing was removed and a No. 5 bag was inserted under light ether anesthesia. Three hours later she had 4 convulsions in rapid succession. She was given 15 c.c. of a 10 per cent solution of magnesium sulphate intravenously. There were no more convulsions. The bag was out of the cervix in 9½ hours. It was deflated and removed. There was no bleeding and the patient was allowed to deliver herself, which she did in 4 hours. The baby was still-born. In addition to the magnesium sulphate, the patient received .024 gm. of morphin and .001 gm. of hyoscin. The mother made an uneventful recovery and was out of bed on the 8th day.

Case 42. Mrs. R. K. P., age 19, I-para, admitted to Johnston-Willis Hospital 7-9-26 for toxemia of pregnancy. Urine contained a heavy trace of albumin and a few granular casts. A bag was inserted and the patient was delivered by version. She had one ante-partum and one post-partum convulsion. Twenty c.c. of a 10 per cent solution of magnesium sulphate was then given. Both patients were discharged in good condition 7-18-26.

Case 43. Mrs. M. R. S., age 18, I-para, admitted to Johnston-Willis Hospital 9-6-26. Her physician saw her in a convulsion, gave her .016 gm. of morphin and 2.6 gm. of sodium bromide and sent her into the hospital. On

admission her blood pressure was 170/142. There was extreme dimness of vision. Urine showed an abundance of albumin, hyaline and granular casts. She was given fruit juices, water and sodium bromide. Two days later when the urine began to clear up she was delivered of a premature boy (1701 gm.) by bag and forceps under sacral analgesia. The baby lived 6 hours. The mother was discharged in good condition 9-16-26.

Case 44. Mrs. G. H. J., age 36, admitted to Johnston-Willis Hospital 3-16-27 in convulsions. Blood pressure was 195/160. Urine contained an abundance of albumin, hyaline and granular casts. There was marked pulmonary edema. Patient was bled 400 c.c. and 20 c.c. of magnesium sulphate (10 per cent solution) were given intravenously. There were no further convulsions. Other treatment consisted of morphin, bromides and chloral. Two days later she delivered herself spontaneously of a 5½ months' fetus. She was discharged 4-14-27.

Case 45. Mrs. H. D. M., age 24, I-para, admitted to Sheltering Arms Hospital 4-9-27, having slight labor pains. Seven hours after admission, she had a convulsion. She was given .016 gm. morphin and a colonic irrigation. While this was being done, she had a second convulsion. After her 3d convulsion she was given 20 c.c. of a 10 per cent solution of magnesium sulphate intravenously. Tincture digitalis 7.5 c.c., and magnesium sulphate 31 gm., were given through a stomach tube. Patient had her 4th convulsion 2½ hours later, and was given 15 c.c. of a 10 per cent solution intravenously. There were no more convulsions. Ten hours later the patient was delivered under sacral analgesia with forceps on frank breech and the after-coming head. Other treatment consisted of forcing fluids. Both patients left the hospital in good condition 4-23-27.

Case 46. Mrs. L. F., age 17, I-para, admitted to the Sheltering Arms Hospital 5-2-27, with a blood pressure of 180/104 and loss of vision. Urine showed heavy trace of albumin. no casts. The next day, a Voorhees' bag was introduced; 18 hours later she had a convulsion. She was given 20 c.c. of a 10 per cent solution of magnesium sulphate intravenously. A premature male infant was delivered with forceps under rectal analgesia four hours later. Immediately after delivery, she had her second convulsion. She was given 10 c.c. of 10 per cent solution of magnesium sulphate intramuscularly. Five hours later she had her 3d convulsion. She was given 10 c.c. of 20 per cent solution of magesium sulphate intramuscularly. Other treatment was an initial dose of .016 gm. morphin, with a little bromide and chloral for 2 days after delivery. Both patients left the hospital in good condition 5-18-27.

In addition to the 46 eclamptics, two other patients were treated with intravenous magnesium sulphate, as follows:

(a) M. J., colored, 56 years of age, a multipara, was admitted to the obstetrical service of St. Philip Hospital unconscious and in convulsions. Blood pressure was 180/110. Urine contained albumin, and hyaline and granular casts. There was an abdominal tumor that corresponded in size to a 5 months' pregnant uterus. She had 4 convulsions in the first four hours after admission. She was given 20 c.c. of a 10 per cent magnesium sulphate solution. In three hours she had another convulsion and was given 10 c.c. She had 2 convulsions in the next twenty minutes. There were no more convulsions. Other treatment consisted of .016 gm. of morphin on admission, tincture of digitalis, 1,000 c.c. of water every eight hours through a nasal tube until patient was thoroughly conscious, and bromides and chloral each night. The patient was discharged 9-20-26 with a diagnosis of chronic nephritis and uterine fibroid.

(b) L. G., 25 years of age, I-para, entered St. Philip Hospital 7-5-25 with a blood pressure of 150/80. She had been in labor since July 2, and her membranes were ruptured artificially 7 hours before she entered the hospital. The patient was delivered of a normal male infant by version. Her temperature was 102 on the day of admission and gradually rose to 105.4. The patient became maniacal, with pronounced muscular twitchings, and was kept in bed with difficulty. Various sedatives, morphin, hyoscin, sodium bromide, chloral hydrate, paraldehyde, luminal and magnesium sulphate (20 c.c. of 10 per cent solution) were tried with varying success. The patient died 7-12-25.

Maternal Results

Thirty-six of the 46 eclamptics were treated with magnesium sulphate. Twenty-six re-

ceived a single intravenous injection; six (cases 4, 6, 22, 28, 38, 45) two intravenous injections, and two (cases 16 and 17) three intravenous injections. To two (cases 12 and 46) the magnesium sulphate was given intramuscularly. With the case of chronic nephritis with convulsions and the one with puerperal sepsis with pronounced muscular twitchings, described above, there are 38 cases that have been treated with magnesium sulphate.

At first, the solution was made up from *chemically pure* magnesium sulphate and sterilized in the hospital. Now that a suitable solution is readily available in ampules, this is no longer necessary.

There have been no untoward effects. The only maternal death was clearly due to sepsis contracted before entering the hospital. There were no maternal deaths among the 36 eclamptics treated with magnesium sulphate. In the 10 cases of eclampsia not treated with magnesium sulphate, there were two maternal deaths.

Infant Mortality

Six mothers were delivered before entering the hospital and there is no data concerning the infant. In the forty cases in which the outcome of the baby is known, there were 41 babies. Twenty-four were born alive, with 5 neonatal deaths, and 17 were still-born, a fetal mortality of 53.6 per cent. The fetal mortality in the group that was treated with magnesium sulphate was 45.1 per cent. The problem of infant mortality is an involved one, and it is difficult to properly evaluate the different factors implicated, i. e., prematurity, toxemia and treatment. It may be significant that four of the five babies who were born alive but died in the first few days, were born to the ten mothers for the control of whose convulsions reliance was placed in morphin and other sedatives.

Conclusions

Magnesium sulphate given intravenously or intramuscularly is a valuable agent for the control of convulsions in eclampsia. It markedly shortens the period of coma. It decreases maternal mortality from eclampsia and to a less extent the fetal mortality.

Since the paper was read two cases of eclampsia have been treated at the Hospital Division of the Medical College of Virginia (cases 32 and 33) and since the paper was written for publication, there have been two more cases not included in the paper. The first of these, an 18-year-old colored primipara, was admitted to St. Philip Hospital, 6-17-27, after her third convulsion. The convulsion was controlled with one injection of the usual dose of magnesium sulphate. She delivered herself of twins, the second of which was still-born. The second (Mrs. B. H., Vi-para, age 36 years) was admitted to the Memorial Hospital, 6-21-27, on account of convulsions. There were no convulsions after admission. Both mother and child lived.

Medical Arts Building.

THE CONTROL OF TUBERCULOSIS IN THE NEGRO.*

By CHARLES R. GRANDY, M. D., Norfolk, Va.

I am indeed very glad to accept the invitation of your Program Committee to address this meeting for I have for several years been noting a growing Public Health Conscience in our Negro citizens. This is not only evident among the principals and teachers in our colored schools, who are making every effort to protect their pupils from contagion and to improve their general health, but it has also spread to the General Public who are now co-operating as they have never done before. Indeed I feel that in carrying out a health measure in the schools I can certainly count on the co-operation of the colored people to be at least as good as that of the white people and often find that they work with us better. As tuberculosis still ranks first among the Captains of the Men of Death when dealing with the Negro Race and I have done more work on this problem than on any other, it is natural that I choose as my subject the Control of Tuberculosis in the Negro. At the same time it will not be possible for me to treat this subject without going somewhat into the general field of tuberculosis, of which it is merely a part.

It will first be necessary to give a short review of some of the recent work done in regard to the transmission of tuberculosis, for we have radically changed our ideas in regard to this and have not yet reached a full and satisfactory conception of the whole problem. After we had learned that tuberculosis was not inherited but that the germ was passed directly or indirectly from the sick to the well, we grouped it along with other infectious diseases, that is we thought that after a person has taken these germs into his body the active disease would rather promptly develop. Further pathological studies, especially on people who had died from other diseases, showed a great amount of infection with tuberculosis which had either been conquered or which was

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*Read before the Old Dominion Medical Society, June, 1927.

in a latent condition. Then the general use of the tuberculin skin reaction showed first that new born children were not infected and second that there was a general increase in infection throughout childhood, while almost the whole of the city population gave a positive skin reaction at the end of the second decade of life, though only a small percentage of these ever develop the active disease.

The X-ray pictures further showed a certain amount of infection in many children and adults who had been in close contact with tuberculosis cases, but who did not clinically have any symptoms and who did not present signs on physical examination. These are the so-called latent cases. To sum up these general findings, we now know that most city children (and most country ones too though not in quite so large a proportion) get infected with tuberculosis, but that the great majority hold this infection in check and never present symptoms. It is taught by many of our authorities that practically all infection with tuberculosis thus occurs in childhood, but that the children take care of it until other things which lower the vitality of the body cause this early infection to become active and produce the well known symptoms of the disease. Recent work done by Opie has thrown considerable doubt in regard to this. Along with other workers in the Phipps Institute in Philadelphia, he has been making thorough studies of families in which there have been cases of open tuberculosis. These studies not only include a physical examination but an X-ray examination and a tuberculin test of every member of the family, done repeatedly over a number of years. He found that practically all people, whether children or grown people, in the house with an open case of tuberculosis gave the skin reaction and showed some X-ray signs of latent tuberculosis. He found that 50 per cent of the consorts of these open cases showed either the latent or active disease, though in the larger number of cases it was latent. This, as I have already stated, was absolutely contrary to the teachings of the last ten years. It shows that the early infection of childhood does not prevent reinfection from without; indeed, Opie believes that though the early infection gives a certain amount of resistance, it does not prevent reinfection which is usually necessary to produce active tuberculosis. He does not maintain that this is the only way that active tuberculosis develops but he does believe that it is much more usual than the simple reactivation of an old latent focus.

In laboratory work done on susceptible animals it was found that there are really two kinds of tuberculosis. The first kind occurs in the animals in which virulent bacilli have been injected. These animals have acute tuberculosis under which they promptly succumb and to which they show little if any resistance. If, however, the animals are first given a small dose of attenuated human bacilli they develop a certain amount of resistance. If then the same dose of virulent bacilli is administered the resulting disease runs an absolutely different course and we have the picture presented by chronic consumption in adult human beings.

This difference is also seen in mankind. When babies have taken in a comparatively large number of virulent germs, they react in the same way that the normal laboratory animal reacts and develop acute generalized tuberculosis to which they show little or no resistance. These are really cases of acute infectious disease with a short period of incubation. And you can be sure that such cases have been infected by close contact with an open case of tuberculosis, generally in a parent. This is, however, not necessary, as I well remember a case of baby who developed meningeal tuberculosis whose source could not be traced until we examined an uncle who had constantly played with the child, and found that he had advanced tuberculosis. The same thing can be produced by the nurse or by the mid-wife, as in the celebrated case of the tuberculous mid-wife who had the habit of inflating the lungs of new-born children by blowing into their mouths, and in this way produced active tuberculosis in ten babies. On the other hand the ordinary case of consumption, of what we now call the adult type, has had an early mild infection and gotten up sufficient resistance to react against a further infection and to produce scar tissue by which the body resists in the chronic form of the disease. This corresponds to the tuberculosis in vaccinated animals.

Following these discoveries it is usual to divide the different forms of tuberculosis into three classes which depend on the resistance of the body and the amount and virulence of the infecting agent. In acute tuberculosis we have an acute infectious disease to which the body

shows very little resistance. This infection gets into the blood and bacilli are carried to different parts of the body where local tubercles develop. The commonest type is the chronic form, formerly called consumption, which is characterized by the formation of scar tissue and the gradual spreading of the process, with the formation of cavities in advanced cases. In these cases the body has gotten up a considerable amount of resistance and can with proper treatment frequently conquer the disease and return to normal life and duty. The prognosis in such a case depends on the extent of the disease and on the amount of body resistance. If we take two cases with apparently the same amount of involvement, the case, that has lasted the longer, thus showing greater resistance, has the better chance of getting well. Then we have the juvenile type, in this condition the child's body has developed enough resistance to hold back the infection and though we have enlarged bronchial glands and some possible extension in the lungs, the case does not tend to progress further and has none of the typical symptoms of the adult disease. When these children are taken care of, are kept from getting extra infection from without, they should not develop active lung tuberculosis. They have, however, within them living tuberculosis germs, which they are for the time controlling but to which lowered bodily strength or further massive infections may add enough fuel to rekindle the dormant flame. To these three classes Opie adds latent tuberculosis, which means tuberculosis in the upper part of the lung tissue which can be demonstrated by X-ray picture and is found after death from other causes, but which is not active enough to produce symptoms or signs which can be ordinarily detected with the stethoscope. In these cases the resistance is very great and it takes a large amount of extra infection or a great reduction of bodily strength from other causes to allow the disease to develop. Between these different classes there are various modifications which again depend upon the amount of infection and the amount of resistance of the body.

So far I have spoken of tuberculosis affecting man and experimental animals but have made no comparisons or special reference to tuberculosis in the Negro.

It is universally recognized that there is in this country more tuberculosis among Negroes than among whites and that it is more fatal to them. Indeed, not so many years ago it was prophesied that tuberculosis would sooner or later settle the Negro Question by eliminating the Negro from the United States, for at that time tuberculosis seemed to be constantly increasing in the Negro Race. This last, however, is not true at the present time for the Negro tuberculosis death rate in Norfolk is now less than half what it was twenty years ago. On the other hand, the white tuberculosis death rate has decreased twice as fast as the Negro rate and is now only one-eighth of the latter. Indeed our Negro rate is still considerably higher than what our white rate was twenty years ago. Therefore, we must concede that while tuberculosis in the Negro is still a tremendous Public Health Problem, it has been so greatly lessened that it is not half as serious in Norfolk as it was twenty years ago. This is very encouraging and must not be forgotten, for it shows that our problem is not a hopeless one. At the same time, when we remember that tuberculosis is now eight times more serious for the Negro than for the white man in Norfolk, it takes real courage to face the long fight which lies before us.

Let us look at some differences between the behaviour of tuberculosis in the two races and try to see what these differences mean. I have worked over the histories of our Clinic patients who died in the last two years and the first point that I noted was that the average duration of life in these fatal cases from the first history of symptoms was only ten months with the Negro, while the average fatal white case lasted four years. I have also noted from physical and X-ray examination that the white case apparently forms much more scar tissue and that his lesions calcify much more often than in a colored case. We have seen earlier in this paper that these are the chief methods by which a resisting animal fights tuberculosis. So it is plain to me that the Negro race as a whole has not gotten up the same amount of resistance to tuberculosis as the white race, probably because the latter has been used to tuberculosis for centuries while the former has only come in contact with it for a few generations. We also find certain familes who apparently have almost no resistance, who die quickly as if without even a struggle and in whom all therapeutic measures are useless. We

also find that the greatest tuberculosis mortality in the Negro occurs in the early twenties while that in the white man comes ten years later. Indeed we found in the series of fatal cases, already referred to, that 44 per cent died before twenty, showing that the majority of these cases started their active disease before they were of age.

We have also found that the permanent results obtained from treatment in the colored sanatorium did not compare with those obtained in the white sanatoria. This does not mean that Piedmont Sanatorium, especially under Dr. Carter, did not give as good treatment as the white sanatoria, for the colored patients would improve in every way, be sent home with good prognoses and then many of them would speedily go down and out in spite of continuing the cure. This seems to me, again, nothing more than another evidence of lack of resistance in the colored race.

With this marked lack of resistance our task is indeed a tremendous one, yet we know the tuberculosis death rate in the Negro is decreasing. We know that he will gladly take treatment and follow it as well as many of the poorer white people, and we know that some cases are cured and stay cured for years. What is the difference that makes the death rate eight times as high in one race as in another in the same city? Some maintain that it is due to malnutrition, yet a colored child for the height and age weighs more and has a better posture than a white child. Some say that on account of less frequent contact the colored man has not been able to build up the resistance of the white man and consequently the disease progresses faster. Though he certainly has less resistance, this does not seem to be due to less frequent contact in a city in which there are actually four times as many tuberculosis deaths among Negroes as among whites, though the latter are twice as numerous. This is also refuted by the fact that mulattoes have a greater resistance and live longer than the blacks and may even run a chronic course seen so often in white but so seldom in colored cases. This has been observed and reported by Carter at Piedmont Sanatorium and at our Norfolk Clinic. The lack of resistance seems to be racial and due to a relatively shorter period of contact with the disease on the part of a race only accustomed for a few generations to civilized life. This, of course, is magnified by the Negro's not knowing how to live a healthful life in a city, or for that matter in houses in the country, and also his not having the means to obtain adequate, healthy housing.

It has been found that babies, like experimental animals which have never been inoculated, have less resistance to tuberculosis than at any other period of life but they will after a mild infection get up so much resistance that the great majority of children are able to throw off the infection of tuberculosis without even having symptoms. Later on in early adult life, or even just before that period, some of this immunity is lost and if the infection is great enough the resistance will be overcome and the active disease will follow. This is relatively true in the Negro as in other races, only in childhood the resistance does not last so long and in certain families is never apparently very great. In these families we find cases of adult type tuberculosis in little children, many of whom show no resistance at all. But other cases of similar age show comparatively great resistance and the adult tuberculosis may be overcome and the child get well, in spite of cavity formation, if he is given any chance at all.

Childhood then is the time when resistance to tuberculosis is greatest and we must do all that is possible to build up the resistance so that it will persist through adult life. While this is true of white children it is still more important in colored children, for it is apparently the only period in life when the resistance to tuberculosis approaches that of the white man. It is then most important to look out for the health of the children, to see that defects such as tonsils and other chronic infections are removed and most important of all to see that their resistance is not overwhelmed by continually taking in fresh germs from active cases in the same house.

In Norfolk we are having splendid results with the colored children we are taking care of in our Open Air School Room. These results compare favorably with the results obtained from sanatorium treatment when looking back over the comparatively short period this class has been in existence. The only trouble here is that we can only provide for between twenty and twenty-five children, while ten times that number really need this care.

It is, however, just as important to protect

the children from massive re-infection as it is to build up their bodily strength. It is here that we in Virginia are not doing all that we should, for I have only been able to find 200 beds in the State of Virginia for colored people with tuberculosis, when we do not take into account those at the Insane Hospital and the Penitentiary Farm. We should have at least five times as many beds for colored patients to allow us to care for the advanced patient who is now spreading infection among the children. On the other hand it sometimes looks as if we were not taking advantage of even the small number of beds now at our disposal for I often get cases at my Clinic who should have been sent to Piedmont months before. These cases have been treated at their homes by physicians so long that all chance of recovery has been lost and all the patients' money exhausted and in the meanwhile the children of the household had been exposed to this continued source of infection from patients, who often did not take proper care of their sputum. The colored patient must be gotten to the sanatorium early if any hope of recovery can be held out. But I feel that the protection of his family from infection is an even more important Public Health Problem, for he is one but they may be many.

Chicago has passed a law requiring the removal of Open Cases (i. e. cases with bacilli in the sputum) from contact with young people. To bring this about the patient must be put in a hospital or the children sent away from home. We must first get enough hospitals to allow such a segregation to be at least partially carried out and then we must educate the doctors and the people to the danger of the Open Cases in the house. We seldom find among Negroes the old chronic case which is such a source of infection to white people. So it is the active colored case which is the source of the trouble and he is the kind of case who needs institutional care for his good as well as for the good of his household.

If I may again repeat, the great difficulty in fighting tuberculosis in the Negro is his racial susceptibility or lack of resistance; on account of this the disease progresses more rapidly and he is not able to combat it and throw it off in the way the white man does under proper treatment. It is therefore necessary for us to use our best efforts at a time when his resistance is greatest and when the disease has not yet arrived at an incurable stage or better still before symptoms of lung involvement have appeared. The only period in which these two conditions occur in the Negro is in childhood. It is therefore in the schools that we should seek our cases as well as in all families in which an Open Case has been discovered. All delicate children should be examined, especially those who have afternoon fever and cough or who are missing time from school on account of sickness. And right here let me warn you not to depend too much on the Height-Weight Tables for these were made for white children and the colored child naturally weighs more and has better posture than the white child of the same age. So do not decide that a child is well, because he is up to normal weight, but examine him carefully if other symptoms make you suspect him. Then do your best to correct his defects, improve his surroundings, and give him plenty of good food, fresh air, and rest (the last being the most important). And while you are doing this try to keep him from extra infection, by getting Open Cases out of the house and into sanatoria or hospitals. If the last be impossible see that the Open Cases take proper precaution to prevent the spread of infection from their sputum, for a careful consumptive need not be dangerous. We have tried this in our Open Air Class for here, with individual care, proper food and rest, all these children have regularly gained weight, strength and class standing and better still have stayed well when promoted to Junior High School.

My plan for combating tuberculosis in the Negro Race can then be summarized in a few words TAKE CARE OF THE CHILD. Protect him in his home from massive infection by sending Open Cases to sanatoria or hospitals. Build up his health and resistance by correcting his defects (such as tonsils), and also by teaching him how to live properly and make use of God's remedies, fresh air, good food, and rest. If he is delicate and more especially if he has been in close contact with an Open Case, watch him carefully, examine him at regular intervals, and be ready to put him to bed either at home or in the Sanatorium at the first sign of pulmonary activity. I know that these measures will produce results, for I have tried them. And now I am begging you doctors to try the same plan. "Take care of the child", protect him from

infection, and build him up so that he will be strong enough to resist tuberculosis, the great enemy of the Negro Race, and be able to grow up into a healthy, useful, God-fearing citizen.

Bank of Commerce Building.

GOITER—CLASSIFICATION AND MANAGEMENT.*

By RICHARD O. ROGERS, M. D., Bluefield, W. Va.

As a positive requisite for a full appreciation of thyroid disease, of which goiter is the main expression, it is necessary to review in an elementary way the importance of the thyroid gland, its histologic structure, and physiologic function. Shaped roughly like a butterfly and occupying a position in the neck astride the trachea, the normal gland weighs but an ounce and a half. Its intimate connection with the circulating blood is evidenced by the fact that it is connected by four substantial branches with large blood vessel trunks of the neck. The circulation of blood through the gland is tremendous and is estimated to be twenty-eight times the circulation of the head and thirty-four times the circulation of the brain.

The thyroid gland is a ductless gland and its structure consists essentially of vesicles filled with colloid and lined with cuboidal or low columnar epithelium. This colloid substance is rich in iodine and undoubtedly plays an important part in the elaboration of a specific hormone which E. C. Kendall in 1914 isolated as a chemical compound and named thyroxin. This specific hormone, kept at an even level in the tissues of the body in health, preserves an even rate of metabolism and, other things favorable, governs and maintains normal physical and intellectual development. No other function of the thyroid gland is known except this elaboration and supply to the circulation of thyroxin in amounts which are normal needs of the individual. In a condition where there is no supply whatever, as exemplified typically in the cretin, there is simple automatic vegetative life and the subject is a mere "human plant". The reverse condition of an excessive supply of thyroxin finds expression in the various hyperthyroid states in which there is evidence of a universal cell over-activity.

In the pathological conditions developing in the thyroid and constituting goiter in its various forms, certain departures from the normal histologic picture occur and consist of changes in vascularity, alteration in the amount of colloid, the development of new acini, and cell hypertrophy and hyperplasia, or a combination of one or more of these changes. These changes are fundamental in thyroid pathology and account for morbid physiology and explain largely the resulting clinical pictures of disease.

Although during the past decade signal and outstanding contributions have been made to the study of the thyroid gland and its diseases, contributing in this way materially to the solution of the goiter problem, the fact has to be conceded that there is much yet to be learned, and in reconciling various divergent views and explaining apparently conflicting facts, there is a great deal of confusion. A principal difficulty which has been responsible most for a lack of understanding of the problem has been a failure to recognize that there are several kinds of goiter and that the management of the morbid process, especially as it pertains to the important feature of iodine administration, must depend upon the type of goiter dealt with in the individual case. In this paper, therefore, the subject is approached on the elementary basis of a workable classification wherein clinical pathological correlation becomes possible and accepted methods of treatment follow as a logical sequence. The classification followed is that worked out by Henry S. Plummer of the Mayo Clinic and divides goiter into (1) Diffuse Colloid Goiter, (2) Adenomatous Goiter without Hyperthyroidism, (3) Adenomatous Goiter with Hyperthyroidism, and (4) Exophthalmic Goiter. Without altering this arrangement of types and at the same time differentiating the disease on the basis of known and unknown etiology, goiter may be further classified as (1) Endemic and (2) Exophthalmic. Endemic goiter includes diffuse colloid goiter and adenomatous goiter with and without hyperthyroidsim, is geographic in its distribution, and whatever the contributing factors, infection or what not, the primary etiologic factor is iodine deficiency. Exophthalmic goiter has no such definite geographic distribution, and while the immediate source of the clinical picture must be attributed to change within the thyroid itself, the exciting cause is certainly not known.

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Diffuse Colloid Goiter. Under the designation of diffuse colloid goiter are included those symmetrical enlargements of the thyroid which are due to the storage of an abnormal amount of colloid in normal vesicles and in which there are no changes in the cellular structure of the gland. This type may be congenital and its occurrence in infancy and childhood is fairly common in families who have lived for many generations is those geographic areas where the disease is endemic. Rarely it may not become evident until the age of 25. The typical case in the United States is the diffuse symmetrical enlagement of the thyroid occurring so commonly in girls at the age of puberty. Its development is so usual, in fact, with the latter half of the second decade of life that adolescent goiter is a synonymous term. The condition progresses from three to five years, often with remissions, and then disappears gradually until it is barely palpable at the age of 25. The blood supply within the gland is not increased, but the superior thyroid arteries may be greatly increased in size, and most notable bruit and thrill may be present. In connection with such a developed colloid goiter, associated independently as it may be with a psychoneurosis or effort syndrome or other disordered action of the heart, it would be easy, without more thorough investigation, to arrive at a conclusion of exophthalmic goiter and advise thyroidectomy. Exophthalmic goiter does occur frequently at this age, but the error of confusing the two would hardly be pardonable, since basal metabolism is normal or minus in the one and greatly elevated in the other. Colloid or adolescent goiter never gives symptoms except often the worry over the mere presence of enlargement in the neck. Rarely there is pressure. It is practically never a surgical condition. Whatever may be contributing factors, we know that the primary etiology is iodine deficiency, and its occurrence in the newborn may be anticipated by feeding iodine to the expectant mother, and its development at puberty or earlier can be prevented by a normal iodine intake. In the case of the developed goiter the size of the thyroid may reduce rapidly and disappear entirely under iodine alone or combined with thyroid administration.

Adenomatous Goiter wihout Hyperthyroidism. For the sake of a logical sequence of events it may be assumed, and is usually conceded, that in most instances adenomatous goiter has its beginning in colloid or adolescent goiter and is therefore a second stage of endemic goiter. Any enlargement of the thyroid thus persisting after the age of 20 may be assumed to contain adenomatous tissue regardless of whether or not such aggregations of tissue can be palpated as nodular masses. A definite nodular thyroid is certainly not the rule under the age of 30, and in the third decade we are aware that transition from the usual appearance of the symmetrical thyroid of a simple colloid goiter to that of the thyroid of adenoma is very slow and gradual. In the fourth decade, or on an average around the age of 35, and later in life there is clear differentiation in a large number of cases, and the popular conception of adenoma is presented in the definite nodular character of the thyroid. Its most familiar expression then is a well defined tumor constituting a true adenoma in which there is a definite limiting capsule. It must be kept in mind, nevertheless, that this is but a single phase of adenomatous goiter and that there must be included the pathological entity designated adenomatosis and consisting of aggregations of newly formed vesicles which are not limited by capsule and which may occur in a circumscribed area or which may be distributed widely throughout the gland. Obviously, in such a situation a nodular character of the thyroid may be extremely difficult or even impossible to make out. Whatever factors enter into the production of a true encapsulated tumor in one instance and an adenomatosis in another we may not concern ourselves; the life histories of both are alike and show the same tendency to cause hyperthyroidism. The dominant phase of the microscopic picture in both instances is the development of new vesicles. When these new vesicles are fully developed they show the same evidence of function as normal vesicles and cannot be distinguished from surrounding normal tissue. There is no true cell hypertrophy and hyperplasia. Everyone is familiar with the enormous size often encountered in goiters of the adenomatous type. Frequent secondary changes give rise to the unimportant designations of cystic, hemorrhagic, and calcareous goiter. In this type also an adenoma of appreciable size may lie behind the sternum or a clavicle and give no evidence of the enlargement of the thyroid gland itself.

The treatment of simple adenomatous goiter is purely surgical and aims at the removal of an unsightly tumor or the relief of certain symptoms which arise by reason of pressure on contiguous structures. Although the assertion brings up one of the contradictory and unexplained facts in the goiter subject, in adenomatous goiter there is iodine intolerance, and the definite indication for iodine therapy, ideally applied in colloid or adolescent goiter, does not obtain in the adenomatous thyroid, and iodine medication, either by oral administration or by local application, becomes a positive contra-indication and a fruitful source of activating an otherwise harmless thyroid. Of the fully developed adenomatous goiters coming under observation 25 per cent are hyperthyroid, and to preclude the development of this activated stage, with its crippling effects increasing with age, the practice of resorting to surgery for all definite adenomatous thyroids after the age of 30 is probably justifiable. The risk in simple adenoma obviously is practically nil.

Adenomatous Goiter with Hyperthyroidism. This type of goiter is commonly designated toxic adenoma and constitutes the activated stage of simple adenoma and the late expression of endemic goiter. No change in the size, contour, or consistency of the thyroid occurs to indicate a hyperthyroid state, and outwardly the physical character of the goiter is not different from that occurring in simple adenoma. The microscopic picture likewise is essentially the same with the exception that the adenomatous tissue shows evidence of moderate hyperplasia. Only 5 per cent of adenomatous thyroids with hyperfunction coming under observation at the Mayo Clinic are in patients under 30 years, and at the same clinic the observation is made that an average period of seventeen years intervenes between the time when a goiter is first noticed and when hyperthyroidism develops. It is evident, therefore, that toxic adenoma belongs well in middle life, approximately 78 per cent of the cases occurring after the age of 40.

In addition to the mere presence of thyroid enlargement, in toxic adenoma the more serious situation of a hyperthyroid state is a critical consideration. Even though the process is slow in developing, the adenomatous tissue once activated shows no tendency to return to a state of normal function, even with supposedly all exciting cause removed. Early manifestations of the disease are tachycardia, moderate loss of weight in spite of an appetite which keeps above normal, and nervous phenomena which we commonly associate with nervous fatigue. Various degenerative changes, especially with reference to cardiovascular change and the development of the clinical entity of a "goiter heart", are late effects of disease rather than active expressions. The basal metabolic rate ranges from plus 30 to plus 50. In contradistinction to exophthalmic goiter, ocular symptoms, the tendency to crisis, and the peculiar nervous phenomena of that condition are absent.

The phenomena developing and constituting the clinical picture of toxic adenoma are undoubtedly dependent upon some condition which causes the thyroid to hyperfunction with a consequent elaboration of thyroxin in excess of normal requirement. What underlies this factor of activity is certainly one of the speculative problems of the goiter subject. We have already spoken of iodine intolerance, and to judge from the multitudinous articles appearing on the subject within the past few years and the furor raised by the universal supply of iodine in table salt and in some cases in municipal water supplies, the question of iodine easily dominates the discussion. That there is evidence sustaining the claim that the promiscuous use of iodine, either as a prophylactic measure or as a curative agent, has had harmful effects in activating simple adenomatous thyroids, there can be no question.

The treatment of true toxic adenoma is surgical in every instance. Preliminary intensive iodine therapy immediately before operation is not indicated as in exophthalmic goiter, but in certain instances where we have not been positive as to whether we were dealing with toxic adenoma or exophthalmic goiter we have given such patients iodine for a week or so and obtained in a fair proportion of the cases what we considered better operative risks. At the Mayo Clinic it is claimed that the mortality has been cut in half by discontinuing digitalis as a pre-operative measure in those cases with a fibrillating heart.

Exophthalmic Goiter. Although the clinical syndrome which we designate as exophthalmic goiter is an immediate expression of changes within the thyroid gland, the real exciting cause is unknown, and the condition is

distinctive and probably has no connection with endemic goiter. Locally, the thyroid may not be perceptibly enlarged, but usually there is moderate and symmetrical enlargement of the gland, and due to marked vascularity there is ordinarily definite bruit and thrill. Microscopically the picture is that of the most evident hypertrophy and hyperplasia. The disease may occur in the aged or in the very young, but generally it belongs to early life and develops at an earlier period than toxic adenoma, 60 per cent of a Mayo Clinic series occurring before the age of 40. Unlike toxic adenoma, the onset of which is gradual, exophthalmic goiter may develop with extreme suddenness and may follow an acute illness or a psychic shock. In the developed case the symptoms of tachycardia, tremor, loss of weight and increased appetite may be simply those of a hyperthyroid state and an abnormal supply of thyroxin. The fury of heart action is often such that is not observed in any other condition, and the loss of weight at the same time that the patient has a most ravenous appetite may be so extreme as to suggest the disease alone. The basal metabolic rate ranges between plus 50 and plus 70. Exophthalmus or a characteristic stare (observed in 65 per cent of the cases), the tendency to cerebral and gastro-intestinal crisis, and the peculiar nervous phenomena are never observed in toxic adenoma and are distinctive of exophthalmic goiter alone. The typically developed picture is so totally at variance, in fact, with what occurs in the ordinary hyperthyroid state, that Plummer draws the conclusion that in exophthalmic goiter an abnormal thyroxin is elaborated and that the clinical expression is that of dysfunction as well as hyperfunction of the thyroid.

In the management of exophthalmic goiter the subject of iodine again dominates the situation and proves once more the dictum of Crile that "the study of the thyroid begins and ends with iodine". As far back as there is any authentic record of goiter, iodine has been known to have some beneficial effect on the course of the disease. Kocher in the past generation recognized the fact, but whenever iodine was used the observation was made that some patients were made worse at the same time that others were benefited, and the profession accordingly was advised to be guarded in its use. The explanation of the observation is to be found in the fact that toxic adenoma and exophthalmic goiter were treated as one and the same thing under the designation of toxic goiter. H. S. Plummer in his work of classifying diseases of the thyroid has shown that the two conditions are separate entities, and in 1922 demonstrated that iodine in what seemed unreasonable and prohibitive doses was of the utmost importance as an adjunct to surgery in goiter of the exophthalmic type. The immediate and universal adoption of this measure suggests an effectiveness which makes it one of the most outstanding accomplishments in the solution of the goiter problem.

The preparation of iodine used is ordinary Lugol's solution and the usual dose is ten drops administered three times a day. This is kept up for a period of from one to two weeks, sometimes longer, in the course of which the reduction in the pulse rate, the gain in weight, and general improvement is almost phenomenal. At the same time there is usually a marked drop in the basal metabolic rate. A patient going into crisis and extremely sick may require larger doses, and in the presence of intractable vomiting the iodine may have to be administered by bowel. The serious condition of the patient does not seem to effect the ultimate outcome. The average patient at the end of two weeks becomes a good operative risk, with none of the heretofore dreaded complications to anticipate. Withdrawal of the drug is followed in a week by a rise in the metabolic rate and a return in some degree of the former severity of the disease. For this reason it is imperative that administration be continued up to operation and persisted with well into convalescence.

It is a well known fact that the medical mortality in exophthalmic goiter has been considerable, death often occurring in a crisis or as a result of an infectious process developing during a crisis. Since the advent of intensive iodine administration this mortality has been reduced to practically nothing. In operative efforts formerly, ligations and two-stage operations were frequent. These are rarely necessary now, thus lessening pain and danger and economizing time and expense. Acute postoperative hyperthyroidism is no longer a serious complication and can be traced probably to an inadequate iodine supply immediately before operation. Occasionally improvement in the patient's symptoms is not spectacular,

but even in these cases the surgeon is surprised with the trifling reaction accompanying operation.

We have no proof that iodine alone is curative of exophthalmic goiter. In our own practice we have seen a few cases controlled for a long period of time where operation was refused or was not expedient. In certain postoperative cases where symptoms have recurred because of inadequate resection or because of some unknown cause, iodine is of undoubted benefit.

At a recent medical meeting where the subject of goiter was under consideration the statement was made by one of the most eminent goiter authorities in this country that a toxic goiter was as truly a surgical condition as acute appendicitis was surgical. The reference included, of course, both toxic adenoma and exophthalmic goiter. We are inclined to be in sympathy with the statement on the condition that the diagnosis is unquestioned. The condition, however, must take something away from the sweeping nature of the statement. In a full flown case of exophthalmic goiter and also in the case of a patient who has harbored a nodular goiter for years and who more recently has lost weight, is nervous, and who probably already has beginning degenerative cardiac change, recognition hardly constitutes an effort on the part of the doctor. A greater number of cases, either by reason of the short progress of disease or else on account of its mild course, are not so well differentiated and constitute some of the most baffling problems in diagnosis. Various nervous phenomena, tachycardia and loss of weight and strength should attract attention to thyroid disease, but it must be kept in mind that one or more of these symptoms may have abundant expression in an anxiety neurosis, effort syndrome, and numerous other conditions which we commonly designate as functional. With the advent of basal metabolism, superficially the problem seemed solved. Its importance is in no way underestimated, and the ability to read even with relative accuracy a basal metabolic rate represents one of the greatest factors in interpreting thyroid activity, but certainly in a case of disease of borderline dimension the evidence is not ordinarily conclusive. There are many elements of error, and to keep within a safe interpretation of reading we must allow for a fairly wide variation. It is the experience of every clinician that many such cases are seen where thyroid disease is suspected, but cannot be con rmed as a positive certainty. In this class of cases we think it is best to temporize and treat medically and be governed later by a clearer differentiation of disease. For the definitely hyperthyroid case, whether it be toxic adenoma or exophthalmic goiter, surgery offers by far the greatest prospect of cure and may be undertaken with the utmost confidence.

SURGERY IN DIABETES.

By J. W. DEVINE, M. D., Lynchburg, Va.

In reviewing the literature in diabetes one is struck with two salient features: first, the large number of diabetics requiring surgical treatment, and, second, the great reduction in the mortality in recent years, especially since the discovery of insulin. Joslin, in a recent paper, *Boston Medical and Surgical Journal*, January 27, 1927, says every third diabetic and possibly every other diabetic sometime in the course of his disease requires surgery; and Fitz, in a series of 385 diabetic patients consecutively treated at the Massachusetts General Hospital, found that 14 per cent required surgical treatment, and Joslin reports 903 cases in which 11 per cent required surgical aid.

A few years ago the hazard in these operations was almost prohibitive. Mortality ran as high as 30 per cent and 40 per cent. Compared with the report from the Mayo Clinic, October 1, 1921, to October 1, 1923, this latter comprised 327 operations, 141 of these being classed as major operations, with a mortality average from all operations of 1.2 per cent. The major operations averaged about 4 per cent. As Joslin says, "still the mortality in surgical diabetes is six times as great as the medical diabetic; he requires six times as much attention."

The regulation of the amount of sugar in the blood is probably controlled by four ductless glands: the suprarenal, the thyroid, pituitary and the pancreas. Diabetes is largely a penalty of obesity. Heredity, age, infection and a nervous element seem also causative factors, as we find it usually occurring in elderly, stout patients with lowered resistance. Phillips groups these cases as follows:

1. The cases in which glycosuria causes the surgical lesion.

2. Those cases in which the two are independent and do not influence each other.

3. The cases in which glycosuria exerts a baneful influence upon the other disease.

When operation is indicated in a diabetic, the urine should be rendered sugar free and the blood sugar should be brought to within normal range if possible, somewhere between 80 and 120 mg. to 100 c.c. blood. Here, again, I wish to point out, and have in other papers, the necessity of close co-operation between the internist, the pathologist and the surgeon. Very few surgeons are competent to prepare these cases for operation, and still less competent to undertake alone the after-care of these cases. This not only applies to diabetic cases, but, in my opinion, all surgical cases should be gone over by a competent internist and frequent consultations will be to the best interest of the patient.

Gangrene and infection, next to coma, are the most important complications. Morrison found it to be a contributory cause of death in 23 per cent of 775 fatal cases of diabetes in Boston during the years 1890 to 1913. The gangrene usually affects the extremities. Arterio-sclerosis is almost always present. This is seldom found in the young diabetic or cases of short duration. One of the most notable points is that, following amputation, a number of these patients have a marked sugar tolerance, some cases requiring small doses of insulin, others none at all. This must be especially watched following the operation, as the insulin may be given in an overdose. Reduce the dose as the sugar tolerance increases.

The gangrene usually attacks the foot or toes and the external appearance is very deceptive, the deeper tissues being involved to a much greater extent than appearances would indicate. Amputation is usually necessary and should be above the knee even though pulsation of the dorsalis pedis artery can be felt. The blood vessels are usually hard and the flaps will be poorly nourished and slough and secondary amputation will be necessary if high amputation is not done.

Thyroid Cases: The increased metabolism of hyperthyroidism is just as harmful to the diabetic as over-eating of food, and is even more apt to cause coma. The frequent occurrence of glycosuria in thyroid cases renders the accurate decision as to blood sugar imperative. During the year 1925, of the 700 patients operated for thyroid disease in the Lahey Clinic, 17 had a glycosuria. Following operation, three cases were able to discontinue the use of insulin, and two were able to reduce the dose materially. At the Mayo clinic, 26 of 191 diabetics operated on were for thyroid disease.

Gall-Bladder Disease: Joslin reports 13 diabetics operated for gall-stones during 1922-1925; no deaths.

The mortality in diabetes depends upon three factors: surgical technique, choice of anesthetic and attention to the medical factor.

Surgical Technique: The operation should be done with all possible speed consistent with good work. The tissues are devitalized and should be very gently handled. Rigid asepsis and extreme care in accurate approximation of tissues should be observed. The slighest inversion of skin is slow in healing and invites infection. The flap in amputation should be longer than in the amputation in non-diabetics.

Anesthetics: Nitrous-oxide oxygen and spinal or local anaesthesia are those of choice.

Attention to the Medical Factor: This is most important, and refers to careful preparation and after-care by the associated internist and surgeon. This is the ideal method, but cannot always be carried out. Often these patients are brought to the hospital with an acute abdominal condition and the routine examination of the urine is the first intimation we have that the patient is a diabetic. The abdominal condition being urgent, we then have to operate in the face of acetone and sugar in the urine.

One of the cases I wish to report was of this type. Patient was a very large woman about 60 years of age, weighing much over two hundred pounds. Heart enlarged, mitral regurgitation with failing compensation, swelling of ankles and legs. She gave a history of having been treated for diabetes but had not of late followed instructions. Her present illness began two days before I saw her with sudden abdominal pain and vomiting. Pain was all over lower abdomen but most marked in right side. Abdomen distended and rigid; tenderness most marked in right side. Vaginal examination disclosed a fullness in posterior fornix but, because of her enormous size and tenderness, very little information could be elicited. Urine contained sugar abundantly; blood showed a high leucocyte count, and there

was blood sugar. Dr. F. M. Perrow who had treated her was consulted. Insulin was given before the operation.

Operation disclosed a large ovarian cyst with twisted pedicle. The cyst was gangrenous with circumscribed peritonitis. She reacted well following operation, and was closely watched by Dr. Perrow and myself. She did well following the operation until about the tenth day, when she had a heart attack, from which she recovered. The wound healed wonderfully, with temperature normal after third day, and with no vomiting or distention. Stitches were removed twelfth day, the drainage having been removed previously. She had another heart attack about three weeks after operation, and died.

Another case was amputation of the leg above the knee; patient, a man aged 39; recovery.

Double amputation above the knees was the third case—woman aged 64. I was associated with Dr. John W. Dillard in this case. She made an uneventful recovery. The amputations were done at about three months intervals.

A fourth case had infection in plantar surface of foot, extending to superficial fascia of leg. Incision from upper part of leg to knee and fascia removed. This patient also had a 4-plus Wassermann and 4-plus sugar. Recovered, wound healed.

The fifth case was one of double inguinal hernia, local anesthetic. Hernia could not be retained by truss and had to be reduced by physician on one occasion. Recovery uneventful.

A sixth case was amputation of leg above knee on male patient, aged 67. Recovery.

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X-RAYS IN DERMATOLOGY.

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Physically, the X-ray belongs to the group of light rays. Its wave length is 2 to 1/10 angstrom units, and even shorter wave lengths are obtained with modern high voltage machines. The shorter the wave length the greater the penetrability. Hence the effort to increase the penetrability and shorten the wave length by using higher and higher voltages. As the more penetrating rays are never used on the skin surface, a discussion of this subject is out of place here.

In dermatology we confine ourselves almost entirely to unfiltered rays. Once in a great while a case may require the use of 1 mm. of aluminum, this being a matter of experience and judgment. The voltage varies from 50,000 to 100,000, higher voltages being unnecessary in that the dose given with very high voltages will give unnecessary radiation to deeper structures. The milliamperage is from two to five.

According to the MacKee method, we must know and accurately measure four factors—spark gap, voltage, time, and focal skin distance. One skin unit is the amount of radiation that will just epilate the hairs of the scalp without an erythema, and without permanent loss of hair. In other words, it is the maximum of X-ray that can be administered to the skin of a healthy blond without causing an erythema. In my work, the following factors will give one unit and epilate a scalp very nicely, 4 ma., 9 in. fsd., 7½ in. sp. gap, 1 min. 15 sec. During the rest of this discussion we will speak in terms of skin units, these factors being understood.

The reason for the action of X-ray on living tissue is still obscure. It appears to act by so altering the chemistry of the cell that its activity is lessened. In large doses it appears to destroy certain cells. Apparently all cells can be destroyed if dosage is large enough. The younger the cell, embryologically, the greater the sensitivity to X-ray. Hence its usefulness in medicine, because the inflammatory cell and the malignant cell are younger developmentally than the normal tissue. In the case of malignancy there may also be some effect on the normal defense mechanism. It is probable that the X-ray is never truly stimulating. Apparently stimulating effects may possibly be explained by the greater effect of

the X-ray on the inflammatory defense reaction, thus allowing an increased activity in the disease treated.

Whatever its method of action may be, there is no doubt that X-ray is the most powerful and effective weapon the dermatologist has at his command. We use three main types of therapy,—one, the intensive for destructive effect; two, the epilating dose where the temporary removal of large quantities of hair is indicated; and, three, the fractional dosage in inflammatory dermatoses and to control itching.

For the first type of therapy the indications are practically limited to new growths. The principal benign new growths so treated are warts, and keratoses. There are, of course, many ways of removing warts. The X-ray is no better than any other of the thorough methods. In proper dosage, about two skin units, at two week intervals, it will remove about 80 per cent of all warts on which it is tried. It has the advantages of cleanliness and painlessness. Where the X-ray fails, I always use the electro-desiccation with local anesthesia, as any thing less radical is also likely to fail. This, however, will produce a little more scarring than the X-ray. There is one type of wart in which the X-ray is almost specific, and in which it is the method of choice. I refer to the plantar wart. Warts of the sole of the foot are quickly surrounded by callus. Very often they develop in a previously present callus which has been pared by a chiropodist. These little lesions from the very onset are very painful and tender, and often make walking almost impossible. Two to two and one-half skin units, with careful screening, repeated every two weeks, will nearly always cure these lesions. I have seen but two failures in a total of over thirty cases, with almost a hundred lesions in the group. The treatment has the additional advantage of nearly always relieving the pain in twenty-four to forty-eight hours after the first treatment. No doubt this is due to an anesthetizing action on the nerve terminals, as the pathology is not affected for several weeks.

Keratoses are localized old age spots on the skin. They occur especially on the exposed surfaces as a result of exposure to sun and wind, on the hands and feet as a result of prolonged arsenic therapy, and in chronic radiodermatitis. The lesion is essentially an hypertrophy and hyperplasia of the epithelial layers, with surrounding inflammatory reaction. These lesions are distinctly precancerous, a very large majority of skin cancers developing from preceding keratoses. Therefore, they should always be removed as a prophylaxis against cancer, especially when thick and indurated. In the case of the radio-dermatitis, endothermy may be used. In all other cases two units of X-ray will painlessly remove these lesions. At times it is necessary to repeat the treatment, but as a rule one will suffice. As these lesions are never very large, the only after-effect is a mildly atrophied skin.

Keloids in the white race can usually be entirely flattened, leaving a smooth soft scar. The amount of X-ray needed, however, will often produce telangiectasia. This may often be minimized where practicable by excising the keloid, and treating the scar with X-rays to prevent the formation of a new lesion which will almost invariably occur if excision alone is practiced.

In the treatment of cutaneous cancer, the X-ray has one of its greatest fields of usefulness. In a discussion of this subject it is essential to separate the two main types of skin cancer: (a) The basal celled cancer. This type is usually located on the head, except the lower lip and ear. The commonest location is about the nose. It does not metastasize except in very rare instances, grows slowly, and usually kills after many months or years by eroding a large blood vessel, or producing such extensive destruction locally that weakness and toxemia carry the patient off. Because of these facts it is not to be regarded lightly; however, I have seen a number of patients die of basal celled cancer.

Practically all dermatologists and most surgeons now regard this disease as a problem of radio-therapy. When the lesions have not involved bone or cratilage, two skin units of X-ray every three to four weeks, repeated as often as needed to cause the entire disappearance of the lesion, and then at least once more, will cure most cases. Usually three to four treatments are necessary. If bone or cartilage are involved, X-ray is still worthy of trial, and will cure some of the cases. If the lesion persists, even in trace for six months, or recurs more than once, it is my opinion that the time for radio-therapy has passed. In these cases I believe that a thorough cauterization with the endothermy is indicated, and this job

should be done without any regard for ultimate cosmetic result.

It is in the treatment of the prickle celled skin cancer that so much difference of opinion exists between radio-therapists and surgeons. The following are my own conclusions, based purely on personal observation and exper in private practice and in looking around in other clinics. It is best to discuss the subject from the standpoint of location of the lesion. On the lower lip, prickle celled cancers treated by X-rays or radium alone probably are not so often cured as by surgery. However, a combination of electro-coagulation and X-ray or radium, with X-ray therapy of the draining lymph nodes often gives excellent results, and the cosmetic result is usually better than with surgical excision. A combination of surgery, with X-ray before and after the operation, particularly X-ray of the lymph nodes, also gives excellent results. In this case excision should be done with the endotherm knife to avoid metastasis at the time of operation. On the tongue, on the other hand, I believe the best chance lies with radio-therapy, particularly the injection of radium needles or radium emanation into the lesion, with thorough radiation of the draining lymph nodes. The lesion should first be thoroughly coagulated with the endotherm. Seeds are then injected around the cancerous area. There is usually quite severe pain after this procedure, and the patient should be kept under the influence of morphine while this lasts.

Prickle celled cancer is much the commonest type on the ear. X-ray should first be tried, as a large number can be cured by it alone, without loss of tissue which is so deforming. If it fails, a thorough electro-coagulation or wide excision should be done. In any case the draining glands should be rayed. Prickle celled cancer elsewhere on the face is unusual. I have seen a few cases, however, and X-ray has apparently cured them without the deformity that a wide excision would have caused. On the extremities these lesions seem to be quite amenable to X-ray. Several cases so treated are well at the end of three years without the loss of the member, which surgery would inevitably have necessitated in these cases. Cancer of the penis is probably best treated surgically, followed by X-rays to the draining glands.

One should give two and one-half skin units to the lesion and a corresponding dose of filtered ray to the draining glands at three week intervals. In case of failure or recurrence after any procedure, I am a great believer in the electro-desiccation for these cases.

In melanotic sarcoma, the only real cures that have been effected have for the most part been those treated by radio-therapy. Thorough cauterization of the initial lesion should precede this treatment. I have treated one case of spindle celled sarcoma of the skin with electro-coagulation and X-ray and he is still well at the end of four years.

The use of the epilating dose is practically limited to the treatment of ringworm of the scalp and beard, and to sycosis vulgaris. In all of these the disease is extremely rebellious to ordinary therapy because the antiseptics used cannot get at the offending organisms because of the presence of the hair in the follicle. Remove the hair temporarily with the X-ray enables us to cure all cases of tinea capitis and of tinea of the beard. Most cases of sycosis vulgaris also respond to this treatment, and those that do not are nearly always incurable.

It is in the use of fractional therapy that the greatest field of usefulness of X-ray is reached in dermatology. In this field it is most convenient to consider the problem in three groups of dermatoses: (a) Those in which the ray is the only method of control, or practically the only method; (b) Those in which it is the most important single method, or in which very great reliance can be placed for relief; (c) Those in which it is of occasional value.

(a) There is perhaps only one disease in which the X-ray offers the only method of control. This is mycosis fungoides. In this nearly always fatal, and always exceedingly distressing disease, there was, up to the advent of roentgenotherapy, no method of controlling the terrific itching that goes with the disease from its very onset as a diffuse generalized scaly eruption. Furthermore, the disease progressed to the formation of the moist fungating tumors with their foul odor and debilitating effect, and the patient went on to a miserable death. Now, with fractional therapy, we can control the itching, cause a temporary disappearance of the dermatitis, resolve the tumors as they develop, and make our patient infinitely more comfortable, and greatly extend his life. Indeed, Fordyce has

recently reported some cases apparently cured by a combination of X-ray and arsphenamin.

In addition to this there are two diseases in which the cure and control is so difficult, and the result from X-ray so brilliant that it may be said to be almost absolutely indicated. These are lichen planus and neurodermatitis (otherwise known as lichenified eczema, flexural dermatitis, lichen chronicus simplex, etc.). A quarter unit once a week, with the use of mercury internally in the case of lichen planus will clear up all but the most stubborn cases of this disease. Of course, one must look to constitutional causes where they can be determined to forestall a relapse.

(b). In the second group is the largest number of inflammatory diseases:

Acne.—Examination of my records shows that over 80 per cent of all cases that have consulted me for this trouble have been treated by the X-ray. In acne indurata X-ray is the only hope other than time, and time is mighty slow in these cases. The longer the disease persists the greater will be the scarring. Therefore, the ray should be urged as early as possible. In acne vulgaris of the milder form about 10 per cent can be cleared up by diet, arsenic, and drying lotions. This is especially true in acute cases, and should always be given a trial before resorting to the ray. The results from X-ray treatment based on personal experience and actual statistical study of over 200 cases may be stated as follows: About 95 per cent of cases so treated (excluding rosaceal acne) are cleared of their lesions under treatment. All these show permanent ultimate improvement, but from 15 per cent to 20 per cent relapse after treatment is stopped, and require further treatment or the use of lotions, etc.

In rosaceal acne the results are not so brilliant. About half the cases are cleared of their acne lesions, a few are improved, and the rest are not greatly benefited. The ray does not affect the rosacea itself.

The routine treatment in these cases is one-eighth unit a week. It takes from eight to sixteen treatments to clear the lesions. The ordinary precautions as to diet, personal hygiene, etc., should be observed. It is important to use no local treatment, as this will increase the danger of an erythema, which should never be produced in treating these cases. More than sixteen treatments should never be given on the face.

During the course of X-ray treatment of the kind outlined, pigmentation may occur, especially in brunettes. The blondes frequently get freckles. Neither of these occurrences need cause concern, as they always clear up when treatment is stopped. The bad results that are sometimes attributed to the X-ray treatment of acne are chiefly that scarring and pitting are more pronounced. I feel that this charge is unwarranted. We have all seen marked scarring and pitting in cases where X-ray was never used. Furthermore, the longer the disease persists the more scars will be produced. It is extremely unlikely that X-ray could produce shrinkage in normal scar tissue in fractional dosage without also causing atrophy of the skin. It should be remembered that even in keloids, where the cellular activity is so much greater, erythema dosage is necessary to produce shrinkage of the lesion. In all probability the idea has arisen because the active lesions are all cleared up in a relatively short time under treatment, with the result that for a short time more scars from healed lesions are present, and the contrast with the normal skin makes the pitting more noticeable than the same number of scars would be were the acne lesions still present.

The greatest danger from this treatment is the production of chronic X-ray dermatitis with the disfiguring telangiectasia. This probably rarely occurs without the occurrence of an erythema. A rigid technique will prevent erythema, especially if one is skilled in the effects the ray produces on the skin, and does not push it in the presence of warning signs. There may be a few people who are radiosensitive, and develop an erythema with a small dose. This point is still a matter of dispute, but in any case the condition must be very rare. Too prolonged treatment may cause atrophy of the superficial muscles.

Eczema.—For the purpose of this discussion we will speak of eczema. It should be understood that we never make this diagnosis without a qualifying term. In this case it includes all cases with the pathologic conditions that we formerly designated by that name. Eczematoid ringworm, infantile eczema, urticarial eczema, trade eczema, irritant dermatitis of all kinds except the very acute cases and seborrheic eczema, are a few of the cases included

in this group. The X-ray in one-eighth unit is much the best single measure for the relief of symptoms and the resolution of the inflammatory reaction. It should be emphasized that it does not affect the cause, and will produce a permanent cure only when the cause is removed, or has ceased to act at the time therapy is instituted. Understanding this limitation, it may be used in all cases of this group without danger. If there is not marked improvement from three or four treatments, further use should not be continued. The dangers pointed out for acne do not apply here.

Psoriasis.—In the treatment of psoriasis the X-ray has become one of our most useful agents. Any one who has ever seen the effects of chrysarobin ointment, or, in fact, any of the other local remedies that have any effect on this disease, will appreciate any method which is clean, painless, and not very time-consuming. X-ray treatment fulfills these requirements. One-eighth skin unit, once a week, will clear up the lesions in at least eight out of ten cases. However, there are certain drawbacks to the use of this treatment. We do not know the cause of the disease. Therefore, the treatment is purely symptomatic. Psoriasis has a most unfortunate tendency to recur. Sometimes the recurrence comes in a few weeks, sometimes not for many months. A few patches only may come back, or a general flare-up occur. It is, therefore, evident that once the patient gets used to the clean and easy X-ray treatment, he is going to demand this treatment with each recurrence, and if the danger of X-ray dermatitis from too prolonged use of the ray is pointed out and treatment refused, the patient simply passes on to another doctor for his treatment. With these drawbacks in mind and with a reasonable amount of precaution, if simpler measures fail, X-ray should be given a trial. It is not advised as a routine treatment for all cases, but it is a valuable measure where properly controlled.

The Infectious Granuloma.—Except for syphilis, all the infectious granulomata of the skin are favorably influenced in a considerable number of cases. In tuberculosis of the skin, lupus vulgaris is often favorably affected, and tuberculosis verrucosa cutis and scrofuloderma nearly always cleared up. In blastomycosis, actinomycosis, and sporotrichosis the ray is one of our valuable adjuncts in treatment. It will nearly always clear up the lesions of granuloma annulare, and often those of sarcoid. In these cases one should use from one-half to three-quarters skin units every two weeks, just avoiding an erythema. Hazen calls attention to the danger of producing X-ray epithelioma in lupus, as the pathology of lupus and X-ray burns are strikingly alike.

In *localized hyperhidrosis* the ray is usually curative. In one-quarter unit doses applied weekly it will cause a gradual atrophy of the over-active sweat glands. One should be cautious not to carry the treatment too far.

In *pruritus ani and vulvae* X-ray therapy is frequently helpful. Cases vary considerably in their response. Some cases are not helped. One case of ten years' duration in my practice was entirely cured with one-quarter unit. Others can be controlled but require intermittent treatment indefinitely. On the whole, X-ray is a valuable aid in these cases.

(c). Among the diseases in which the X-ray is of occasional value may be mentioned lupus erythematosis. My own opinion is that its use in these cases is never justified. Beta radiation with radium may help some cases, but I have seen a number of cases made much worse and seriously damaged with both gamma ray and X-ray. Dermatitis herpetiformis is occasionally helped, though usually only a little relief from symptoms and no permanent benefits are produced.

Recurrent crops of furuncles, and carbuncles may at times be cured by epilating the area affected. Except in very localized areas hypertrichosis should never be treated by X-ray.

For the sake of completeness, I should mention that some of the rarer dermatoses are likewise favorably influenced. Lichen nitidus, dermatitis dysmenorrheica, synovial lesions and acanthosis negricans may be mentioned as examples.

OBSERVATIONS ON MALNUTRITION.*

By SAM WILSON, M. D., Lynchburg, Va.

The observations in this paper are meant to apply to children between the ages of three and thirteen years respectively.

Of late years, there has been a great diffusion of knowledge as regards infant feeding and hygiene. As a direct result thereof, children in all classes of society, from the mansions of the wealthy to the warrens of the poor, receive intelligent care during infancy.

*Read before South Piedmont Medical Society, April, 1927.

Be it said to the eternal praise of the social service worker, that the above principle is reflected in a steadily diminishing infant death rate.

After three years of age, there is a relaxation of the scrutiny accorded the infant. As a consequence hereof, the child forms bad food habits and bad health habits. Moreover, this lack of surveillance is directly responsible for physical defects passing unnoted.

Even when noticed these physical defects are oft-times allowed to continue uncorrected under the delusion that the child will outgrow them.

These pre-school years, however, are very critical years in the life of the child.

This is attested by a glance at the mortality statistics. A perusal thereof reveals the fact that one-fifth of all deaths occur before the sixth year of life, or, six times as many as in the next ten years of life.

Those in a position to speak authoritatively tell us that an essential factor in this mortality rate is malnutrition. In other words, the malnourished child is particularly susceptible to infection, and often times succumbs almost without a struggle. This fact behooves us to throw every possible safeguard around the under-weight child during those years wherein he is most susceptible to those diseases that hurry to an untimely grave so many younglings of infancy and childhood.

Now, what are the causes of malnutrition? What causes did I indite years ago, and for a time accept, only later to spurn or relegate to a position of secondary importance?

First.—Poverty and insufficient food. Years ago when I began the practice of pediatrics, I considered malnutrition to be a question of poverty and food. I thought all that was necessary was to see that the child was supplied with sufficient food, and that it was properly prepared. I approached the study of the under-weight child from this viewpoint.

It soon became manifest to me that my conception was all awry, that while poverty may, relatively speaking, in a few cases be a contributing factor, it was not the fundamental cause of malnutrition.

It was, and is today, a matter of common observation to find mal-nourishment among my rich as well as my poor clientele. I also noted that only infrequently did we find two cases of malnutrition in the same home. This applied to the tenderloin as well as the exclusive residential district.

Second.—Bad air, particularly referable to sleeping conditions. To my great surprise, the improved sleeping conditions did not reflect an improved physique in point of the child.

Third.—Heredity, especially as it applies to the constitutional vice of syphilis. This conception of the basic cause of mal-nourishment is still an hypothesis in some minds.

As my colleagues here in Lynchburg know, I formerly gave a great deal of mercury. I gave it freely to my cases of malnutrition. Now, after more than a decade of close observation thereof, I would mention it only to condemn it. I would peremptorily condemn it, because I have remarked, that, most undernourished children are born of normal weight and continue to be well and strong through the period of infancy. Now, if lues was an etiological factor in these cases, you would expect to see some stigmata of syphilis, or get some history thereabout during the early period of life. There has been a signal absence of any immediate or remote landmarks that could be reasonably placed in the role of associative relationship with syphilis. This pronouncement of course applies to the generality of cases. Occasionally we find a case of malnutrition predicated upon a luetic basis, but, relatively speaking, it is an infrequency. This has been the experience in the large metropolitan centers where malnutrition has been studied extensively and intensively. When Wassermann tests were done on large groups of mal-nourished children, the evidence, that syphilis is an associative factor, was found to be negligible.

This dictum applies to tuberculosis as well as syphilis. I was particularly struck with the uniform negative von Pirquets in my malnourished cases. Those children that I thought might have tuberculosis gained just as rapidly in weight as the others when the cause of their underweight was ascertained and corrected.

I confess it was difficult for me to give up my syphilitic hobby, but, disconcerting as it was, I decided to disabuse my mind of this pre-conceived idea, and to study each individual case just as I found it. This I did with open mind, and it led to a new perspective and to a new reconstruction of values.

The chief causes of malnutrition in Lynch-

burg and its environs are, first, physical defects, and, second, over-fatigue.

Of course we see cases of malnutrition due to faulty food habits, such as eating with canine voracity, illy masticating the food and washing it down with a copious amount of water. We also see some cases due to faulty health habits, but these things are less important in the etiologic role of malnutrition. The outstanding, conspicuous causes of malnourishment in this immediate vicinity are, as I indicated above, namely, physical defects and over-fatigue.

1. *Physical Defects.*—In an examination of this species it is imperative that the child's clothing should be removed. It is only by this procedure that defects of posture and growth are likely not to be overlooked.

The facial appearance of the child is no measure of its nutrition. Repeatedly we see children with round, winsome faces, yet these same children have serious physical defects, that are clarified by an examination without clothing. This examination with child undressed is often a revelation to the parents and caretakers of the child. It may be argued that an examination of this kind takes too much time, and one can ill afford to do it. A point worth considering in this connection is that while the examination is time-consuming, yet its thoroughness does away with the necessity for its repetition, and thus in the end, is really time-saving.

Now, when I speak of physical defects I refer especially to naso-pharyngeal obstruction, for this is of paramount importance. Of course, one has to exclude such morbidities as pyelitis, intestinal parasites, etc., but all these things, relatively speaking, are of lesser importance. Pre-eminently the most important of all defects in its relation to nutrition is obstruction in the naso-pharyngeal vault.

A close scrutiny should always be made of the naso-pharyngeal vault when a case of malnutrition fails to gain and all other causes have been excluded.

2. *Over-Fatigue.*—Continued experience in the treatment of malnutrition leads me to the belief that over-fatigue is more frequently overlooked as a cause of malnutrition than any other factor.

Many grown people apparently have no adequate conception of how wearing are the activities of the average child. Many of those who do recognize such a status, lightly pass it by as incidental to childhood, and to be viewed only as a temporary discomfort and not as a cause of serious injury.

Of course, we have no single test, or group of tests, that will serve as an accurate measure of over-fatigue. However, we are not helpless in this situation. We can tell a good deal by the way the child reacts to his tasks. Then, too, we have something upon which we can recoil with certitude, and that is the weight curve of the child. The weight curve is the most valuable test available to show the effect of fatigue. That statement can not be italicized too often. If the child fails to gain, after other known causes for his loss of weight have been removed, over-fatigue must always be suspected as the cause of his poor condition. I have seen very often cases of this nature where the simple expedient of enjoining mid-morning and mid-afternoon rest periods brings about an immediate gain and thus elucidates that over-fatigue was in fact the obstacle that prevented a satisfactory gain in weight.

Time and time again I have parents come into my office with the same old story. Its quintessence is thusly, "I went to Dr. So and So and he advised me to have my child's tonsils removed, stating that it was the cause of my child's poor health. I followed his advice, but my child is no better. What can be wrong, do you reckon?"

A careful inquiry into these case histories will elicit the fact that the child did need tonsillectomy. These cases nearly all give a history of recurrent tonsillitis, mouth breathing and so on, which manifestly justified the operation. The contention is not that the operation was groundless, but that the follow up treatment was omitted. The case had been treated from only one viewpoint, viz., the physical defect, while the equally essential principle, the fatigue element had been tabooed.

It is for recognition of the latter that I plead. This fatigue element is particularly noticeable in the wiry, high strung type of mal-nourished child. In the vernacular of the street, "he runs himself to death."

A study of his daily program will demonstrate how wearing are his activities. It is imperative to get an accurate rendition of this daily program. With this idea in mind I make the parents bring me a written statement of the child's activities for two consecu-

tive days. It is better to have a record of two successive days for one day may be abnormal. I usually choose Friday and Saturday because then you get an idea of his activities as they relate to school, and as practicalized on a day when he is out of school. This strikes a happy medium.

Now, with this illuminating photograph of his physical activities before us in black and white, and with a detailed list of all food taken on these two consecutive days, we are capacitated to advise the parent judiciously.

Sometimes it is necessary to bring out some facts about the child's over-fatigue that are not on the written record. For instance,—How long is the child actually in bed? How much of the time that he is in bed is spent in sleep? Does he get up in time to get to school without hurry and worry? It is most important to inform one's self as to the actual time that the child is asleep. Recumbency in bed, while beneficial, is not as salubrious as we desire it unless it is associated with sleep.

The amount of sleep needed varies with the individual, but every mal-nourished child should spend at least from ten to twelve hours in bed every night. In addition to this, a rest period should be enjoined in the middle of the morning and in the middle of the afternoon. These rest periods, of course, shorten the period of activity during the day and thus conserve many strength units and restore the waste of past activity.

A proper amount of sleep is absolutely essential to nutrition, and I am sure that the satisfactory results that I have had the good fortune to achieve in the treatment of malnutrition, have been due largely to my insistence that the child rest in a quiet, darkened room for two hours after the noon-day meal. I always insist that the room be darkened, because the nervous system is more completely relaxed, and sleep is more profound in the dark than in the light. This fact has been attested by experimentation. Children are so sensitive to all impressions that eyes as well as brains need the complete rest which darkness affords.

Now, gentlemen, the subject of malnutrition has not received the attention that it should receive. The mal-nourished child is not considered sick as long as he is out of bed and going around. His physician does not see anything exigent in his case. Apparently the condition is so commonplace that doctors as well as parents pay little or no atention to it. The child is considered well and is so treated unless he shows some acute symptoms of some morbidity. This viewpoint is an egregious misconception.

There is no justifiable reason for the widespread malnutrition in this country. Anent the extent of malnutrition in America, nutritional statistics show that at least one-fourth of all children in this country are under-weight for their height. We affirm that there is no justification for this proven fact. Why? Because the essentials of health are so few and are so easily procurable.

The requirements for good health in the growing child are few indeed, viz., good air, simple food, rest and proper exercise. When these are supplied and the causes of malnutrition removed, then the child is in a condition that the nutrition worker speaks of as "free to gain." Once you get a child in the status of "free to gain," then you can rely on nature, you can recoil on nature with assurance for she will certainly give a strong impetus to the child's development, and the child will respond to this strong force in nature that makes for his recovery.

As to the procurability of these essentials of health, I can only speak authoritatively as regards Lynchburg and its environs.

I make the statement without fear of successful contradiction, that the essentials of health are available in almost every home in these precincts.

Milk and bread have become standarized. The market is flooded with an abundance of cereals that can be bought for a song. Thus, a large part of the dietaries is established on a high plane.

Nutrition workers tell us that even on East Side New York, the tenement section of Boston, or the slums of Chicago, substantially every home in these purlieus is capable of supplying the quantity and quality of food essential to health.

The basic cause of under-weight so rampant in this country, and so tragically reflected by the late Selective Service Draft incidental to the Great War is not pauperism or any thing similar thereto, but is an individual equation, touching the individual child as it relates to physical defects, food habits, health habits and over-fatigue.

I would not close this paper without dwell-

ing for a moment on the recognition of the mal-nourished child. You say—How may I identify the mal-nourished child?

We know that in infants the weight is the best test of good health on the part of the child. This principle applies throughout childhood; wherefore the weight curve continues through childhood, as in infancy, to be the surest indication of proper growth and development. The basis of weight for height has proved to be an accurate measure of the condition of under-nourished children. The idea involved herein is that a body of a certain height requires a certain weight to sustain it; therefore, the relation between this weight and height is the most important test of a child's physical condition. Weight charts are available at city, state, or Federal health bureaus and familiarity with such a chart should be a part of the indispensable armamentarium of the physician.

Then, too, there are certain physical signs of malnutrition that are self-evident. The expression of the face and eyes is an important sign. I have been struck with the fact that these children have a very serious look, a somewhat drawn appearance about the eyes. There are often dark circles under the eyes. They are usually pale and lack the glow of health. The skin is often very loose and loses its tense feeling; in other words, there is poor "tissue turgor". The muscles are very flabby and these children very often have a characteristic posture. This posture is technically called "fatigue posture." Its earmarks are about as follows, viz., the head sets forward, the shoulders are rounded, the shoulder blades protrude, the chest is rather flat and the abdomen is rather prominent. This posture is very much like the posture of an elderly man whose muscles are flabby and weak and who is bent by the decrepitude of advanced years.

We remarked that every physician should familiarize himself with a weight chart and accept a certain table of averages to guide him. After acceptation of such a chart, it will, of course, be necessary to determine what range of variation is compatible with reasonably good growth.

In nutrition classes, 10 per cent underweight is taken as the standard. In other words, it has been found that a child habitually 10 per cent underweight for his height will always show signs of malnutrition. My experience reflects the accuracy of this pronouncement.

In conclusion, I desire to say this: Time after time I have these cases come into my office with the diagnosis of "No Disease." It is true in the general acceptation of the term, there is no disease, but from the standpoint of physical fitness there is everything the matter with them. They have few or none of the trumps in this game we call "life," and it is for these that I plead. I plead for a careful diagnosis of these; I plead for a careful scrutiny of these, because it is from their ranks that the failures and the physical shipwrecks of life are later recruited.

Medical Arts Building.

"LEST WE FORGET."

By JOSEPH LYON MILLER, M. D., Thomas, W. Va.

By our memorial days we keep green the memory of the great personages and events in our religious and political life. With Christmas and Easter we remember the birth and death of Christ. The Fourth of July reminds us of the men who wrote and proclaimed one of the world's greatest documents of civil liberty. Other state and national holidays annually recall many important men and deeds of achievement.

Why then should not we, as members of one of the most honourable and ancient of the professions, from time to time devote a meeting of our societies, or at least more frequently present a paper recalling the names and work of those great physicians of the past, whose epoch-making contributions mark the progress of medicine from superstitious empiricism to scientific rationalism; and place in the written annals of our state the records of the work and influence of those worthy physicians whom we have succeeded—men whose careful experiments, or keen observation and interpretation of facts ages old, revolutionized the thought and practice of our art? Why should we leave all this to a few medical historians and antiquarians any more than leave to the President and Senate the keeping green the memory of The Declaration of Independence?

In presenting to us the existing state of medical practice our journals and textbooks, except in the more recent discoveries, but rarely give any historical perspective, or mention the various steps by which it has arrived at its present standing.

Such names of the old masters given are

but those attached to certain diseases or operations and mean nothing more to the rank and file of us. Nothing is said of what part they played in the evolution of our knowledge, or what manner of men were they.

How many of us know more of Harvey than that he discovered the circulation of the blood—was it by accident or by years of careful dissection and study; or of Lister than he is called the "father of antiseptic surgery"? What do we know of Galen, Vesalius and Fabricus, whose dissection and study of anatomy brought them to the very brink of Harvey's discovery—great men, they, yet lacking something that made them fall just short of his accomplishment. What of White, of England, and Mott, of New York, who practiced clean—we might almost say *aseptic*—surgery years before Pasteur and Lister gave it a rational basis?

Americans, at least, should know that Oliver Wendell Holmes antedates Semmelweis by four years in publishing a paper proving the contagiousness of puerperal fever, and strongly indicting the attending physician and midwife, a paper that for its martialing of facts, clarity of reasoning, and incontestable conclusions will ever remain a gem of medical literature to be read and re-read with interest.

As we percuss a chest or abdomen, and listen with a stethoscope to the various sounds beneath the surface, do we ever think of Auenbrugger who gave percussion to the medical world in 1761, or of Corvisart, Napoleon's physician, who re-introduced it in 1808 after it had been neglected for a generation; or of Laennec, Corvisart's brilliant pupil, who invented the stethoscope in 1816 and introduced the profession to auscultation? Founders, they, of modern physicial diagnosis, or as Osler said of Laennec, "his use of the stethoscope and observations on the diseases of the heart, lungs and abdominal organs may be said to have founded modern clinical diagnosis." As we admire and follow the great work of Cabot in correlating the clinical history of a patient with the postmortem findings, do we ever think to give credit to that same brilliant Laennec who stood alone in his own and preceding generations as the pioneer in this form of clinical teaching?

Virginia Physicians

What educated Virginian is ignorant of the names and achievements of Virginia's sons in politics, war, jurisprudence, letters and religion? But how many do you find, even in our own profession, who know aught of her sons in medicine? What history of Virginia gives more than a cursory mention, or none at all, of her medical men, albeit there is no lack regarding the other professions? Whose the fault—the historians? No. It is ours, the doctors of today and yesterday. We are the ones who permit the names and lives of those who preceded us to lie covered by the far-flung dust of oblivion; doctors, many of whom combined the distinctive qualities of all the other professions—the culture of the man of letters, the personality of the politician, the fearlessness of the warrior, the reasoning of the lawyer, and the charity of the minister; men who were described some forty years ago by a Virginia author as "gentlemen of the highest culture, refinement, and social position, who were an honor to their families, their race and their country, who, seeking and desiring neither the praises of the populace nor the honors attached to place and power, were contented to pass their lives in the bosom of their communities, and leave a record of their merits and deeds only as they were inscribed on the hearts and memories of their immediate countrymen. The high classical attainment, the exalted mental abilities, and the profound analytical powers of some of these men would render them, were they now living, veritable giants in our profession." They were men who did none of the splendid, far reaching things of a Washington, Jefferson or Marshall, yet, nevertheless, they probably did more to mould public opinion, to keep the moral and social life on the highest plane, and to protect the physical and economic health of the state, than any other single class in it.

Space forbids mentioning more than a mere handful of those doctors of other days of whom Virginians should know and be proud. They should not forget that among the earliest botanists in America there were two Virginians of first rank, Dr. John Mitchell (1680-1768) of Urbanna, and Dr. John Clayton (1693-1773) of Gloucester, Fellows of the Royal Society of England, whose transactions contain many of their papers. They were also correspondents for years of some of the greatest naturalists of the world, who named some of our beautiful flowers for them. Mitchell published a Map of the British and French Dominions

in North America in 1755 that "marked an era in the geography of North America" and "was quoted in boundary negotiations"; he wrote probably the earliest and one of the best descriptions of Yellow Fever and its post-mortem findings of his day, but unfortunately it was not published until long after his death, so that others gained priority. Clayton was the author of "Flora Virginica" which appeared in several editions between 1739 and 1762, and this is referred to by all writers treating of North American plants.

Nor should they forget two Caroline physicians—Dr. John Tennant, author of the earliest work on "The Epidemical Diseases Peculiar to Virginia" (1738), and a pioneer in the profession's fight against quackery and professional jealousy; and Dr. William Baynham (1749-1814) who gave up a large and lucrative surgical practice in London to return to his native state, where in 1790 and 1799 he operated twice successfully for ectopic pregnancy, being preceded only by John Bard, of New York with one case.

Most Virginians know of U. S. Senator Benjamin Watkins Leigh, of Virginia, and H. G. Leigh, founder of Randolph-Macon College, but how many know of their kinsman, Dr. John Leigh, of King William County, who but two years after the close of the Revolution took the Harveian prize in Great Britain for his "Experimental Inquiry into the Properties of Opium and Its Effects on Living Subjects", of which Dr. Howard Kelley says: "Leigh's work was the dawning of the critical experimental spirit destined to yield such a harvest in the next century."

Nor should Virginia forget her great sons in the medical profession whose genius flowered in other states, such as McDowell, "The Father of Ovariotomy", and Dudley, the great lithotomist and teacher of surgery in Kentucky; and Nathaniel Chapman who took up the gauge thrown down by Sydney Smith in his sneering remark,—"In the four quarters of the Globe who reads an American book? What does the world yet owe to an American physician and surgeon?"—and gave an effective answer a hundred years ago by raising American medical journalism to the first rank in its day. He was also a great teacher, and founded the first post-graduate medical school in America.

One might go on indefinitely citing names and epoch making discoveries in medicine, and recalling many Virginia physicians worthy of remembrance, but surely the few that have been mentioned are enough to arouse our interest and study. To those interested only in the history of medicine in general let me say: anatomy, physiology, clinical medicine, surgery, obstetrics—all have their great epochs and great names, men who laid stone on stone in the solid wall of the wonderful edifice of modern medicine. To those proud of their native state let me urge that they uncover the records of medicine's past in Virginia—fill the annals of the Medical Society full of data so rich that no future historian can find an excuse for not giving the medical profession its proper place in Virginia's lustrous coronet of her sons and their achievements.

Every doctor's library should include Camac's "Epoch Making Contributions to Medicine", Garrison's "History of Medicine", and Kelley's "American Medical Biographies", even if they do not go farther afield in medical history. Those who have not done so have no idea of the delight that comes with an hour now and then spent in the pages of such books, or of the broader and more interesting vision one gets of his profession.

Let us not forget—"The living present owes a debt to the past."

POLYURIA.*

By W. B. LYLES, M. D.,
and
ROY P. FINNEY, M. D.,
Spartanburg, S. C.

The object of this paper is a brief review of *polyuria* with the report of a case of more than usual interest. In connection with this we also desire to call attention to a new danger of prolonged drinking of excessive quantities of water for therapeutic purposes.

Before beginning a discussion of the subject at hand, it is well to recall that so far as we know the excretory function of the kidney is not governed by nervous impulses directly. Indirectly, it is influenced by vaso-motor changes that have a nervous origin. Thus, it is common knowledge that fright, worry, sleeplessness, etc., accelerate urinary flow. Rises in blood pressure from any cause tend toward diuresis; falls in blood pressure favor oliguria. The composition of the blood is an important factor. When it is more hydremic than normal,

*Read before the South Carolina Medical Association, Anderson, S. C., April 21, 1927.

polyuria is favored, but when the watery content falls to normal or below its excretion is resisted. The part played by the different portions of the kidney in the excretion of water is still unsettled. No one has improved on the theory advanced by Ludvig more than 70 years ago, that filtration of water and salts takes place through the glomeruli, and that water and certain salts are resorbed by cells lining the convoluted tubules, thus concentrating the urine. Metzner[1] carefully reviewed the subject and concluded that Ludvig was probably correct. It must follow, then, that urinary excretion is increased in the presence of one or both of two basic conditions: 1. Whenever there is increased circulation of blood through the kidneys; 2. Whenever the watery content of the blood is excessive. It is obvious that the blood flow through the kidneys is increased whenever the blood pressure is raised as by pituitrin or adrenalin, or when a local vaso-dilatation of the renal vessels is produced as by theobromine, diuretin, and caffeine. Excessive hydremia of the blood follows when too much water is absorbed from the bowel as in polydipsia, or when it is absorbed from the tissues as in diabetes mellitus in which disease there is an enormous increase in the molecular concentration of crystalloids in the blood. Upon a basis of these facts, all physiologic and most pathologic polyuria may be explained. For descriptive purposes it is convenient to divide pathologic polyurias into two classes,—first, those due to disease elsewhere than the pituitary region; second, those due to disease of the pituitary gland or adjacent tissue.

Polyuria Due to Disease Elsewhere than the Pituitary Region.

Under this heading we may classify polyuria such as that occurring during the removal of exudates and edemas, in chronic interstitial nephritis, in diabetes mellitus, and at times in hyperthyroidism and other constitutional diseases. From the view point of the urologist it is interesting to note that it may occur in certain surgical diseases of the urinary tract. The emptying of a large hydronephrosis, some types of renal congestion such as occur in prostatism, bladder malignancy, tuberculosis, and stone may cause polyuria. Keyes[2] states that in the early stages of unilateral renal tuberculosis the involved kidney may surpass its fellow in the quantity of urine excreted. Fletcher and Kearns[3] report a case of severe polyuria with thirst and polydipsia occurring in a patient suffering with carcinoma of the bladder. Pituitrin failed to allay symptoms, and autopsy did not show interstitial nephritis. Iams[4] saw an interesting case in a child four years old who died of uremia. Both thirst and polyuria were severe and autopsy showed complete suppurative destruction of both kidneys, nothing but a shell remaining. He concludes that the excretion of urine must have been purely mechanical.

Neurologists are familiar with hysterical polyuria. As the name implies it occurs only in neurotic people and is due entirely to excessive water drinking. Sometimes great difficulty is experienced in differentiating it from true diabetes insipidus, for the patient is convinced that he must imbibe large quantities of water to make up for that excreted by his kidneys, and will deny emphatically that he drinks more than necessary. Whatever the cause originally, polydipsia in these people may become a habit comparable to morphinism or nicotinism. When one considers how frequently excessive intake of fluids is nowadays advised by physicians as a therapeutic measure, and the quantity of literature distributed among the laity by the proprietors of various mineral springs, it must be obvious that some overcredulous neurotics will become obsessed with the idea and develop into habitual hydromaniacs. So far as we know, this danger has never been discussed; certainly it has never been emphasized. It presented itself forcibly to us in the form of the following case:

Mrs. J. H. G., age 45, consulted one of us in May, 1925, complaining of excessive urination, stating that she passed over a gallon of urine every day. There was excessive thirst and weakness, with dizziness and nausea when this was unsatisfied. She voided every hour or two throughout the day and night, and retired with a two gallon bucket of water and three chambers at her bedside. There was no other complaint. Careful history revealed that three years ago her physician had told her to drink "all the water she could hold" for the relief of chronic constipation and arthritis. Later she visited Hot Springs where the same advice was given and followed religiously by her. She does not remember when excessive urination began but thinks it came on gradually about three years ago and has gotten progressively worse. Physical examination was negative, as

was the urine except for a specific gravity of 1.004.

She was placed in the hospital and for two days allowed all the water she would drink. In this time she consumed four gallons of water and voided two and a half gallons of urine. Intake of fluids was then diminished a pint a day until she was getting only three quarts in 24 hours. No medication was given except a half dram ammoniated tincture valerian three times a day, a trial dose of pituitrin having had no effect on either the thirst or polyuria. The quantity of urine immediately became normal and at the end of three weeks she was discharged as cured. She has remained well for two years.

During treatment no serious symptoms were noted though she complained bitterly of thirst and could sleep only a few hours a day with the aid of full doses of veronal.

Polyuria Due to Diseases in or Around the Pituitary Gland.

It will be remembered that Bernard in his experiments discovered a spot on the floor of the fourth ventricle which when irritated produced diuresis. Cushing obtained the same result by touching the pituitary gland with the cautery. Investigations of Camus and Roussy[5] show that lesions of the tuber cinereum produce polyuria and that this occurs without participation of a secretion from the pituitary gland. Sajous[6] maintains that the area of the brain immediately adjacent to the pituitary gland is a nerve center influencing water excretion through the kidneys, and calls it the hypophyseo-basal area. He believes it is directly connected with the kidney by means of a nerve path running through the cervical sympathetic and splanchnic plexus.

While much of the intimate detail of the function of the pituitary gland in its relation to urinary excretion is obscured by argument and conflicting experiment, the following facts appear to be established: 1.—Injury or manipulation of the gland or of tissue in its immediate vicinity, as may occur during certain cranial operations, causes diuresis. 2.—Disease of this area causes diuresis. 3.—The extract of the posterior lobe of the pituitary given hypodermatically will greatly diminish diuresis due to either of the above factors. 4.—Pituitrin has no marked effect on polyurias due to other causes.

Diabetes insipidus is at present recognized as being of pituitary origin. Osler defined it as "a chronic affection characterized by the passage of large quantities of normal urine of low specific gravity." Most cases that have come to autopsy revealed disease in or around the pituitary gland. It was first noted by Willis in 1674, and differentiated from diabetes mellitus by him. It is rare, Brown[7] having found only 15 cases in 25,000 admissions to the medical wards of St. Bartholomew's hospital.

Treatment

The treatment of polyuria not due to disease of the hypophyseo-basal area consists in eliminating the cause if this can be found. Very little relief is to be obtained from drugs, though valerian and ergot have been used empirically and may be tried. True diabetes insipidus and other polyurias of hypophyseo-basal origin are remarked benefited by pituitrin. Schafer[8] was the first to call attention to the effect of this preparation on urinary secretion and, following him, in 1913, Von de Velden[9] and Farini and Ceccaroni, working independently, administered it to patients with diabetes insipidus with excellent results. Since that time it has been used more or less routinely with success in properly selected cases. The usual dose is one-half to one c.c. given hypodermatically once in 24 hours.

Summary.

Polyuria means the passage of excessive quantities of normal urine; frequency of urination is not involved in the meaning of the word.

It may be due to injury or disease of the pituitary gland or of tissue in its immediate vicinity. With this etiology pituitrin is practically a specific, giving speedy relief.

It may be due to various other extracranial diseases or injuries. Here pituitrin has little or no effect. Hysterical polyuria occurs in neurotics and has no pathologic basis. It is due to excessive water drinking which may become a habit comparable to morphinism. Physicians may cause the formation of this habit by unwise advice.

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Chamberlen (Hugh) [1630-].

Mauriceau (Francois) [1637-1709] The accomplisht miswife, treating of the diseases of women with child, and in child-bed. As also, the best directions how to help them in natural and unnatural labours. With fit remedies for the several indispositions of new-born babes. Illustrated with divers fair figures, newly and very correctly engraven in copper. A work much more perfect than any yet extant in English; being very necessary for all teeming-women, as also for all physicians, chirurgeans, and midwives that practice this art. Written in French by ..... Transl. and enlarged with some marginal notes by Hugh Chamberlen. 10 p.l., 437 pp., 3 l., 16 pl. sm. 8°. *London, B Billingsley*, 1673.

For Biography, see Aveling (J. H.) The Chamberlens [etc.] 8°. *London*, 1882.

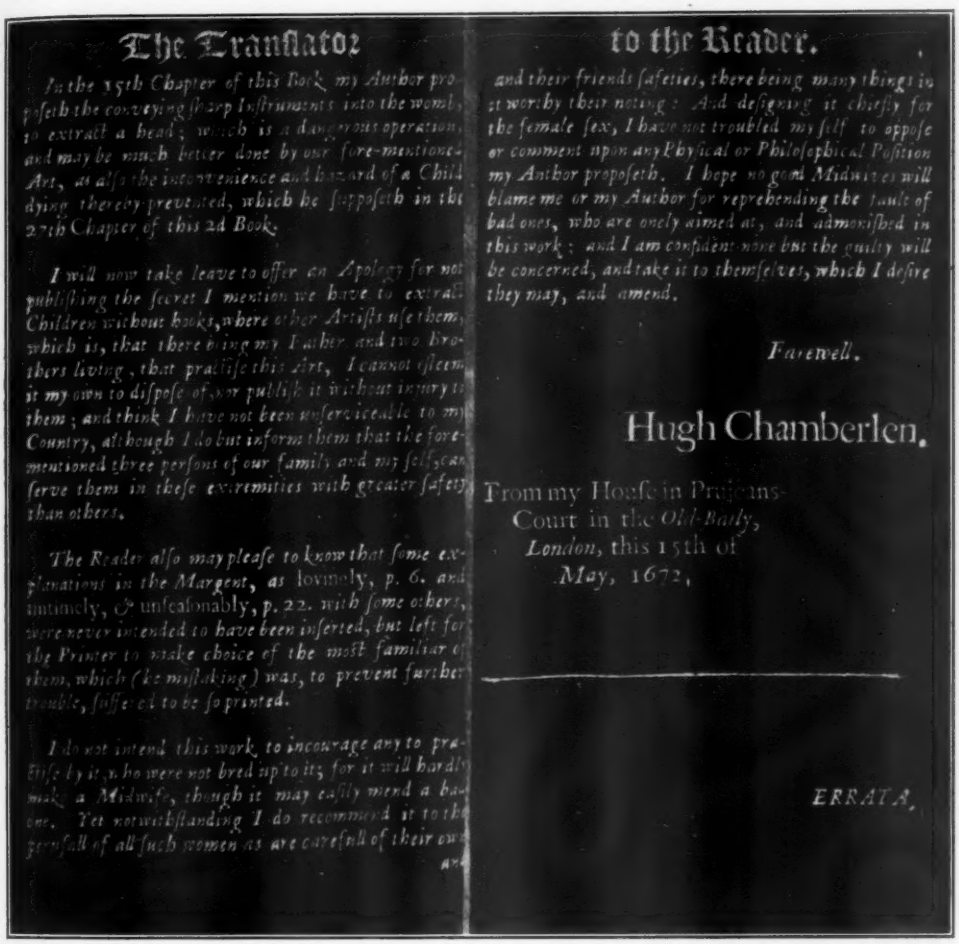
The origin of the obstetrical forceps is shrouded in mystery and is difficult to treat bibliographically. The secret was so jealously guarded by the Chamberlens through generations that the actual discoverer remained unknown until comparatively recent times. Aveling, who has carefully investigated all existing records of the family, believes that Peter Chamberlen, Sr., was the originator. Smellie mentions the fact that they were "contrived by the uncle," which could only mean Peter, Sr. The Chamberlens published nothing concerning the forceps except that they "by Gods, and our industry attained to, and long practiced a way to deliver a Woman in this case without any prejudice to her or her Infant; though all others, (being reduced, for want of such an expedient, to imploy the common way) do, and must endanger, if not destroy one or both, by the use of these Crochets. By this manuell operation we can also both shorten the time, and lessen the number of pains in a right Labour, (if there be the least difficulty) without danger, and with advantage to both Woman and Child." Dr. Hugh Chamberlen in his introduction to the translation that he made of Mauriceau's work, goes on to give his reason for not making public such a wonderful method.

It is curious how loth the early inventors of forceps were to publish anything concerning their instruments. Palfyn, who was the first to exhibit obstetrical forceps before a Medical Society (Paris Academy, 1721*), published not a line concerning them. His instrument was first described by Heister in Germany in 1724. Duseé in Paris apparently independently devised a forceps, which was shown in Edinburgh by a pupil in 1733, the year of Duseé's death (Edinburgh Royal Soc. Tr. Vol. III). According to Schroder there was a family in Japan by the name of Kangawa who for years practiced a secret method of delivering women. Theirs was a contraption of whale bone and silk cord.

Dr. Hugh Chamberlen was the great-grandson of William Chamberlen, the Huguenot emigrant to England. Among William Chamberlen's children were Peter, Sr., and Peter, Jr. Peter Junior's oldest child, Dr. Peter, was the father of Hugh Chamberlen, and two other sons, Paul and John, all of whom attained to considerable reputation in London as obstetricians. Hugh Chamberlen's son, also named Hugh, was probably the most famous member of the family, and according to Norman Moore, his monument disfigures the north choir aisle of Westminister Abbey. This similarity in names, occupation and character has been very confusing and Aveling is due great credit in unravelling the mystery.

Hugh Chamberlen [1630-] like his great-uncle was accoucher to the Queen. At the birth of the Prince James Edward, afterwards known as the Old Pretender (June 10, 1688), Chamberlen came too late to be present. His very curious letter to the Electress Sophia of Hanover is still preserved and is considered

*Engelman gives the date as 1721, Doran 1722 and Schroder 1723.



The Translator to the Reader.

In the 15th Chapter of this Book, my Author proposeth the conveying sharp Instruments into the womb, to extract a head; which is a dangerous operation, and may be much better done by our fore-mentioned Art, as also the inconvenience and hazard of a Child dying thereby prevented, which he supposeth in the 27th Chapter of this 2d Book.

I will now take leave to offer an Apology for not publishing the secret I mention we have to extract Children without hooks, where other Artists use them, which is, that there being my Father and two Brothers living, that practise this Art, I cannot esteem it my own to dispose of, nor publish it without injury to them; and think I have not been unserviceable to my Country, although I do but inform them that the fore-mentioned three persons of our family and my self, can serve them in these extremities with greater safety, than others.

The Reader also may please to know that some explanations in the Margent, as lovingly, *p. 6. and* intimely, *&* unseasonably, *p. 22. with some others, were never intended to have been inserted, but left for the Printer to make choice of the most familiar of them, which (he mistaking) was, to prevent further trouble, suffered to be so printed.*

I do not intend this work to incourage any to practise by it, who were not bred up to it; for it will hardly make a Midwife, though it may easily mend a bad one. Yet notwithstanding I do recommend it to the perusall of all such women as are carefull of their own and their friends safeties, there being many things in it worthy their noting: And designing it chiefly for the female sex, I have not troubled my self to oppose or comment upon any Physical or Philosophical Position my Author proposeth. I hope no good Midwives will blame me or my Author for reprehending the fault of bad ones, who are onely aimed at, and admonished in this work; and I am confident none but the guilty will be concerned, and take it to themselves, which I desire they may, and amend.

Farewell.

Hugh Chamberlen.

From my House in Prujeans-Court in the *Old-Baily*, *London*, this 15th of *May*, 1672.

ERRATA.

Photostat copy of the introduction to "the Accomplisht Midwife" (courtesy of the Army Medical Library), in which Hugh Chamberlen offers an apology for not publishing the secret. It is very evident from the next paragraph that the art of proof reading was little practised in the 17th century.

the most important evidence against the popular theory that the prince was a suppositious child. Like brothers, father and uncle, he was full of schemes, religious, political and financial. When his famous land bank scheme collapsed, he left London. His departure was emphasized by Luttrell's "Hue and Cry after a Man-Midwife."

At first he went to Scotland and later to Amsterdam, where he died in obscurity. The last record that has been found about him is a document dated November 14, 1720, in which he renounces the administration of the estate of his second son, Peter, late Commander of H. M.'s Ship Milford, a bachelor deceased.

Woman's Auxiliary, Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

Advantage of the Medical Auxiliary to the Medical Profession.

Following is the address to the Woman's Auxiliary in Petersburg, Virginia, October

19th, by Dr. J. Warren White, Norfolk, first vice-president of the Medical Society of Virginia:

This is not only a pleasure but a great privilege for me to appear before the Woman's Auxiliary of the Medical Society of Virginia. Your president, Mrs. Southgate Leigh, has always been so responsive when called upon in any movement for the advancement of the Norfolk County Medical Society, that I feel very happy to have this opportunity of expressing myself in regard to your organization.

When women were excluded from all rights and privileges, and men felt they only were qualified to gather around the council fires and discuss the affairs of state was probably a survival from the barbaric ages. That day has long passed and women are now taking an active part in the administration of the affairs of our government, national, state and local, in research work, science and the many professions. Even in the marriage vow the word obey is being omitted, showing that woman has assumed her rightful place as a helpmate and counsel for man.

The Woman's Auxiliary of the Medical Society of Virginia was organized October 1st, 1923, with only twenty-five members, and now it has a paid up membership of 350. This growing organization having the approval of the American Medical Association and the Medical Society of Virginia will continue its advancement only by getting the women in the various counties organized. As soon as the women get a vision of what they can accomplish in health and happiness for our home and state, then the results of their labors will be made manifest throughout this Commonwealth.

For those who have not yet awakened to the importance of this work, I can not do better than to quote from Mrs. John O. McReynolds, president of the Woman's Auxiliary of the American Medical Association: "It is what its name implies—a reserve force, an aid, a group of conscientious physicians' wives organized for the purpose of responding to the call of the medical profession. While our husbands are wrestling with purely scientific problems, we are playing our humble part in the drama of their life's work, our function being to assist in lightening the burdens of humanity, by helping to preserve the health of the people and by training the public as far as we can to a higher appreciation of the medical profession."

The one great object of the medical profession today is to teach the public preventive medicine, and in no way can they be assisted in putting over this great message better than by the help and co-operation of the Woman's Auxiliary.

The members of the Auxiliary in every county are usually among the most active club members. They are in a position to have special health meetings and give to these clubs the advances in preventive medicine, also stressing the importance of periodical medical examinations. In this way the health conditions of the community will be discussed by the women and they will continue to discuss it by the fireside. In no better way can this message bear fruit than the general discussion in the family circle.

I saw recently a newspaper article in which a mother protested against the medical advice given by a school inspector and gave as her reasons that the father had had toothache all his life, so the child would have to put up with it. Many persons argue what is good enough for his father is good enough for him, and some of us seem to think we must go through all the experiences of our forefathers. The opposition is strong in many homes to new ideas, and can only be overcome by education of the public.

Through the Auxiliary, the doctors' wives have become acquainted with our medical meetings, giving them a better knowledge of the work, thereby making them helpmates and pushing the profession on to greater things. When they become interested in the health problems of the community and take an active part in the Auxiliary, then they will be anxious for their husbands to take an active part in the medical societies and not isolate themselves. This alone will be a great stimulus to the profession, for it is essential that the modern physician attend medical meetings if he wishes to keep abreast of the times.

The Auxiliary has shown a spirit of co-operation and willingness to assist in every way possible. In the social features they have more than done their part in adding to the pleasure of the meetings and promoting a better fellowship.

As the Woman's Auxiliary grows and they become better acquainted with our objects and ideals, then will the profession at large have an organized body in full accord with them, to assist and encourage them to go forward,

when trying to accomplish some great object for the betterment of mankind.

Dr. Wendell C. Phillips, ex-president of the American Medical Association, in a recent address, said "May all mankind have the vision of a healthier, happier world which will blossom into unheard of activity. May we dedicate ourselves through service to all that will advance and maintain and increase the sum of human happiness. Every one who looks into the future is charged with being a dreamer. But the verdict of history has always been that the onward march of science, religion and civilization has been led by dreams."

"Who dreams shall live. And if we do not dream
Then we shall build no temple into time.
Yon dust cloud, whirling slow against the sun,
Was yesterday's cathedral, stirred to gold
By heedless footsteps of a passing world.
The faiths of stone and steel are failed of proof,
The king who made religion of a sword
Passes, and is forgotten in a day.
The crown he wore rots at a lily's root,
The rose unfurls her banners o'er his dust.
The dreamer dies, but never dies the dream,
Though Death shall call the whirlwind to his aid,
Enlist men's passions, trick their hearts with hate,
Still shall the vision live. Say nevermore
That dreams are fragile things. What else endures
Of all the broken world save only dreams."

—*Dana Burnet.*

The Woman's Auxiliary to the Norfolk County Medical Society,

At its annual meeting in November, elected Mrs. M. N. King, of Norfolk, president. At this meeting, the ladies voted to sponsor a movement for the establishment in the city of a hospital for the care of tubercular patients. The Auxiliary favors a 100-bed hospital for white and colored patients, to be a part pay and part charity institution. The immediate need for such a hospital in Norfolk was the main topic of discussion at this meeting, the City Home being the only place open to tubercular cases in that city, at this time.

Mrs. Charles R. Grandy, Norfolk, was made chairman of this hospital movement, and Mrs. Southgate Leigh chairman of health education.

The Truth About Medicine

In addition to the articles enumerated in our letter of September 26th, the following have been accepted:

DePree Company
  Sulpharsphenamine—DePree
    Sulpharsphenamine—DePree, 0.1 Gm. Ampules
    Sulpharsphenamine—DePree, 0.15 Gm. Ampules
    Sulpharsphenamine—DePree, 0.2 Gm. Ampules
    Sulpharsphenamine—DePree, 0.3 Gm. Ampules
    Sulpharsphenamine—DePree, 0.4 Gm. Ampules
    Sulpharsphenamine—DePree, 0.45 Gm. Ampules
    Sulpharsphenamine—DePree, 0.6 Gm. Ampules
    Sulpharsphenamine—DePree, 1.0 Gm. Ampules
    Sulpharsphenamine—DePree, 3.0 Gm. Ampules
Gilliland Laboratories, Inc.
  Typhoid Vaccine, 30 Ampule package
Eli Lilly & Co.
  Ephedrine—Lilly
    Inhalant Ephedrine Compound—Lilly
Parke, Davis & Co.
  Erysipelas Streptococcus Antitoxin (Refined and Concentrated)—P. D. & Co.
E R. Squibb & Sons
  Scarlet Fever Streptococcus Toxin-Squibb, 5 vial package (500, 2,000, 8,000, 25,000, 60,000 skin test doses)
  Scarlet Fever Streptococcus Toxin—Squibb, 50 vial package (500, 2,000, 8,000, 25,000, 60,000 skin test doses)
Winthrop Chemical Co.
  Mesurol
    Emulsion Mesurol, 20 per cent
Nonproprietary Articles
  Ephedrine (base)

NEW AND NONOFFICIAL REMEDIES

Diphtheria Toxin-Antitoxin Mixture, 0.1 L+ (New and Nonofficial Remedies, 1927, p. 341).—This product is also marketed in packages of 30 bulbs each containing 1 c.c., representing ten immunizing treatments. Parke, Davis & Co., Detroit. (Jour. A. M. A., October 1, 1927, p. 1151).

Bromural—2-monobromisovalerylurea, obtained by the interaction of urea with bromisovaleryl bromide. Bromural is a nerve sedative which produces sleep in mild cases of insomnia without markedly affecting the circulation or respiration. It is claimed to be useful as a nerve sedative and for the purpose of inducing sleep in functional nervous disease. Bromural is not effective in cases of insomnia associated with pain, cough, angina pectoris or delirium. It is supplied in substance and in five grain tablets. E. Bilhuber, Inc., New York. (Jour. A. M. A., October 8, 1927, p. 1251).

Erysipelas Streptococcus Antitoxin Refined and Concentrated—P. D. & Co.—An erysipelas streptococcus antitoxin (New and Nonofficial Remedies, 1927, p. 337) prepared by immunizing horses with cultures of streptococcus isolated from erysipelas The potency of the product is declared in "units," a unit representing the amount of antitoxin required to neutralize one skin test dose of toxin. It is marketed in packages of one piston syringe containing 500,000 units. Parke, Davis & Co., Detroit. (Jour. A. M. A., October 15, 1927, p. 1335).

Mesurol.—Benzobis.—A basic bismuth salt of methoxy-hydroxybenzoic acid containing from 54 to 57 per cent of bismuth. Mesurol is proposed as a means of obtaining the systemic effects of bismuth in the treatment of syphilis (see New and Nonofficial Remedies, 1927, p. 99, Bismuth Compounds). The drug is supplied in the form of emulsion mesurol, 20 per cent for intramuscular administration. Winthrop Chemical Co., Inc., New York. (Jour. A. M. A., October 22, 1927, p. 1427).

PROPAGANDA FOR REFORM

Grapefruit Infusions.—The use of a cold water infusion of whole grapefruit (including peel and pulp) seems to be one of the fads of Frank McCoy, who dispenses so much dietetic information that isn't so. According to McCoy, grapefruit "con-

tains organic quinine," which, he declares, has "a quicker effect than the inorganic form of quinine used in tablet form." According to McCoy, this infusion of grapefruit is "valuable in its action upon the liver and gallbladder in the elimination of gallstones." Few men have a larger fund of dietetic misinformation than that possessed by Frank McCoy. (Jour. A. M. A.,, August 6, 1927, p. 470).

Liver Extracts in Anemia.—The striking effect of feeding liver and certain preparations of liver on a number of physiological processes has been established. In the case of growing animals, it appears to promote rapid gains in size. The extraordinary effect of diets including liver on severe anemias of long standing in dogs has been shown. Vigorous regeneration of hemoglobin and red blood cells can be brought about by feeding the hepatic tissue of various species, beef, pig, sheep, calf and chicken having been tested with unquestionable success. Striking effects have been obtained in pernicious anemia with diets containing large amounts of liver in one form or another. Studies undertaken to determine the constituents of liver which are effective in pernicious anemia have been made and potent concentrates have been obtained. (Jour. A. M. A., August 13, 1927, p. 524).

Lucky Tiger.—This is a dangerous nostrum sold for the treatment of dandruff, eczema and sore feet. Because of reports of severe skin irritation following the use of "Lucky Tiger," the A. M. A. Chemical Laboratory analyzed it. The Laboratory concluded that the preparation consists essentially of ethyl (grain) alcohol, methyl (wood) alcohol, sodium salicylate and sodium arsenite. The amount of arsenic present as sodium arsenite was about one-tenth as much as found in solution of potassium arsenite (Fowler's solution). When the amount of the preparation that will be used in an application is considered, it can be readily appreciated what a relatively strong solution of arsenic this is. This preparation has no place among legitimate home remedies. (Jour. A. M. A., August 13, 1927, p. 541).

Lukosine Not Acceptable for N. N. R. *II.—Since publication of the report of the Council on Pharmacy and Chemistry on Lukosine, the National Drug Co. has informed the Council that the quantitative formula for the preparation is given in its price list and in its "revised advertising." The latter contains the following formula: "Boric acid, 80.5 per cent; alum, 9.2 per cent; zinc sulphate dried, 4.0 per cent; zinc phenolsulphate [Phenolsulphonate?], 2.5 per cent; sodium salicylate, 2.5 per cent; phenol, 1.0 per cent, rendered pleasantly aromatic with a blend of thyme, peppermint, eucalyptus and methyl salicylate. Each heaping teaspoonful contains 1/75 grain of hydrastine white alkaloid." In view of this the Council revises its statement by the omission of the word "semisecret" to read: "Lukosine is unacceptable for N. R. R. because it is a needlessly complex, and therefore irrational mixture, marketed with a therapeutically suggestive name and with unwarranted therapeutic claims, in such a way as to lead to its indiscriminate and ill advised use by the public." (Jour. A. M. A., August 13, 1927, p. 542).

Digitalis.—It is well known that many cardiac patients who fail to improve with full digitalization, owing to some unknown condition, show marked improvement when the same specimen of digitalis is given subsequently. Such cases afford opportunity for attributing extraordinary value to any digitalis preparation that the clinician happens to employ in the second course of treatment. (Jour. A. M. A., August 13, 1927, p. 543).

Fumigation and Antiseptics.—To prevent the spread of contagion, personal cleanliness, mechanical cleansing of contaminated areas and the boiling or burning of articles that are grossly contaminated is much simpler and safer than the use of antiseptics and fumigation. These often do little more than to give a false sense of security and leave a disagreeable odor. (Jour. A. M. A., August 13, 1927, p. 543).

Harrell Associated Chemists.—Harrell Associated Chemists, 322 W. Washington St., Chicago, exploit a mail order cure for rheumatism. As the head of the organization, one J. Randolph Harrell is put forward. In the advertising he is styled "Professor" and advertised as "an authority on physiological chemistry." The facts are, Harrell is unknown to reputable medicine, pharmacy or chemistry. (Jour. A. M. A., August 20, 1927, p. 637).

Alpha-Lobeline.—The Council on Pharmacy and Chemistry reports that under the name "Alpha-Lobeline," Ernst Bischoff Co., Inc., markets a solution of the hydrochloride of the alkaloid alphalobeline. The product is marketed in ampules stated to contain, respectively, 1/6 grain and 1/20 grain of alpha-lobeline hydrochloride. The product was submitted to the Council with the claim that its use was indicated in "asphyxiations, shocks and poisoning where there is central respiratory depression." The Council's report states that alpha-lobeline has been very extensively advertised with claims that are extravagant, often bordering on the sensational. The evidence as to the value and safety of the product is still so incomplete that the Council has been unable to reach a definite conclusion. The Council calls attention to a circular issued by the American distributors containing a "Partial List of Hospitals Using Alpha Lobeline" and to a paper by Norris and Weiss. To learn something as to the experience of some of these hospitals with the drug, letters were written to twenty-seven of the more prominent of them. While the reports of some of these hospitals are favorable to the use of the drug (although it cannot be said that they are at all conclusive), it is evident that the circular containing this list of hospitals "where the drug is being used" gives an erroneous impression as to the extent of its use and of the results to be expected. The paper by Norris and Weiss and other papers which have been published contain no conclusive evidence regarding the usefulness of alpha-lobeline. Since adequate evidence for the therapeutic usefulness of alpha-lobeline is lacking at the present time, the Council has postponed definite action in regard to the eligibility of the drug for inclusion in New and Non-official Remedies. (Jour. A. M. A., August 27, 1927, p. 693).

Some Recent Observations on the Fat Soluble Vitamins.—The concentrate of vitamins A and D represented by the nonsaponifiable fraction of cod liver oil is not effective in herbivora unless it is fed dissolved in oil. These observations have been confirmed in the case of an omnivorous species. This makes one question the advisability of attempting to supply vitamins to man in the form of dry concentrates unless the latter are given in oil or in close proximity to a meal that carries fat. The ready solubility of vitamins A and D in fats made it seem likely that liquid petrolatum would also be a good solvent. Since the latter is not absorbed from the gastro-intestinal tract, and since it had a widespread use as a laxative, it is important to ascertain whether the fat-soluble vitamins in the food are liable to be "diverted" from alimentary absorption by the presence of the nonabsorbable

liquid petrolatum solvent. It has been shown that liquid petrolatum may act as a solvent for vitamin A, thereby depleting ingested foods of their supply of this factor. A comparable influence on the antirachitic vitamin has not yet been demonstrated, though it may naturally be expected if liberal amounts of liquid petrolatum are ingested. Attempts have been made to increase the antirachitic potency of cod liver oil by irradiation. The evidence indicates that this is not feasible. (Jour. A. M. A., August 27, 1927, p. 694).

Revising the Pharmacopeia.—Apparently some misunderstanding as to the exact nature of the United States Pharmacopeia has given opportunity for criticism of the work of the Revision Committee, particularly of the Subcommittees on Scope and Nomenclature. The first edition of the United States Pharmacopeia, published in 1820, expressed the purpose of selecting from among the substances used in medicine those remedies most worthy of medical employment. To any one at all familiar with the progress of the U. S. Pharmacopeia, it is obvious that it tends more and more to become a scientifically reliable work, to realizing more and more greatly the necessity for established proof of virtue before admission can be granted. (Jour. A. M. A., August 27, 1927, p. 697).

Hexol Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Hexol (formerly called Maxol), is manufactured by the Sanitary Supply Co., and is a pine oil soap solution stated to have the following composition: Pine oil, 65 per cent; rosin soap, 10 per cent; cocoanut oil soap, 10 per cent; water, 15 per cent. It belongs, therefore, in the class of pine oil disinfectants which were introduced some twenty years ago in the expectation that they would replace the cresol soap solutions such as Liquor Cresolis Compositus. The Council points out that the name of this unoriginal compound is not descriptive of the composition, and is also misleading in that it suggests the product to be an alcohol containing six carbon atoms. The Council reports on the lack of acceptable evidence for the claims that are made for the preparation and calls attention to a government bulletin giving notice to manufacturers of pine oil disinfectants in regard to the evidence which should be obtained before such products are recommended as general disinfectants. The council found Hexol unacceptable for New and Non-official Remedies because it is an unoriginal mixture marketed under a nondescriptive, proprietary name, and because it is marketed under claims that are unwarranted in the light of available evidence. (Jour. A. M. A., August 27, 1927, p. 711).

Book Announcements

Nasal Neurology, Headaches and Eye Disorders. By GREENFIELD SLUDER, M. D., F. A. C. S., Clinical Professor and Director of the Department of Oto-Laryngology, Washington University School of Medicine, St. Louis. St. Louis. The C. V. Mosby Company. 1927. Octavo of 428 pages with 167 illustrations, including 2 color plates. Cloth. Price, $11.50.

Diseases of the Skin. By HENRY H. HAZEN, A. M., M. D., Professor of Dermatology in the Medical Department of Georgetown University; Professor of Dermatology in the Medical Department of Howard University, etc. Third Edition. St. Louis. The C. V. Mosby Company. 1927. Octavo of 572 pages with 248 illustrations, including two color plates. Cloth. Price, $10.00.

Diseases of the Mouth. By STERLING V. MEAD, D. D. S., Professor of Oral Surgery and Diseases of the Mouth, Georgetown Dental School; Professor of Diseases of the Mouth, Georgetown Medical School; Oral Surgeon to Georgetown Hospital, etc. St. Louis. The C. V. Mosby Company. 1927. Octavo of 578 pages, with 274 original illustrations in the text and 29 full page color plates. Price, $10.00.

The Normal Diet. A Simple Statement of the Fundamental Principles of Diet for the Mutual Use of Physicians and Patients. By W. D. SANSUM, M. D., F. A. C. P., Director of the Potter Metabolic Clinic, Department of Metabolism, Santa Barbara Cottage Hospital, Santa Barbara, Calif. Second Edition. St. Louis. The C. V. Mosby Company. 1927. 8vo of 136 pages. Cloth. Price, $1.50.

Tobacco and Physical Efficiency. A Digest of Clinical Data (with Annotated Bibliography). By PIERRE SCHRUMPF-PIERRON, M. D., Professor of Clinical Medicine, University of Cairo. **Preface** by HENRI VAQUEZ, M. D., Professor of Medicine, University of Paris. Published under the Auspices of **The Committee to Study the Tobacco Problem,** with a Foreword by ALEXANDER LAMBERT, M. D., President. Paul B. Hoeber, Inc., New York. 1927. 8vo of 134 pages. Cloth. Price, $1.85.

Nerve Tracts of the Brain and Cord. Anatomy: Physiology: Applied Neurology. By WILLIAM KEILLER, F. R. C. S., Ed., Professor of Anatomy and Applied Anatomy, University of Texas. New York. The Macmillan Company. 1927. Octavo of 456 pages. Cloth.

Strabismus. Its Etiology and Treatment. By OSCAR WILKINSON, M. D., D. Sc., Surgeon in Chief of Washington Eye and Ear Hospital, Washington, D. C. St. Louis. The C. V. Mosby Company. 1927. Octavo of 240 pages. Illustrated. Cloth.

Abbott Ampules of Guaranteed Purity and Accuracy. Therapeutic Suggestions for Their Uses. Copies may be obtained without cost on application to the Abbott Laboratories, North Chicago, Ill.

The Rockefeller Foundation. Annual Report. 1926. The Rockefeller Foundation, 61 Broadway, New York, N. Y. 466 pages. Paper.

Better Business Through Research in New England Industry. Introduction and Summary of Findings. Prepared for the Research Committee of the New England Council by the Policyholders Service Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York. 29 pages. Paper.

The Growing Child. His Needs and Cares. By HERMAN N. BUNDESEN, Sc. D., M. D., Commissioner of Health, Chicago, Professional Lecturer in Public Health Administration in the University of Chicago, etc. Author of various books on health subjects. Octavo of 144 pages. Paper.

Virginia Medical Monthly

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Editorial

Detection of Pernicious Anemia.

Experience lends color to the observation that pernicious anemia not infrequently advances to terminal stages before recognition of the dire blood condition is made. As one's clinical experience widens, both from personal patients and consultation patients, one is impressed by a too great frequency of failure to detect pernicious anemia in anything like early stages. Pernicious anemia has had too inconspicuous a place in medical literature; it has, along with other anemias, played subordinate roles. It has been possibly over shadowed by the larger light in the catalogue of disease:—tuberculosis with its anemia, malaria with its blood destruction, cancer with its cachexia, cirrhosis of the liver with its pallid and tinted complexion, and diseases of spleen with blood destruction have been foremost in consideration, without emphasis upon blood pictures. Too frequent instances have occurred in which there was a failure in the recognition of that distinct disease entity, pernicious anemia.

The awakening of interest in pernicious anemia has brought to light the suggestion, too, that there have been cases which have escaped recognition until very late stages.

If one keeps in mind accepted clinical signs of pernicious anemia, the disease may be rather easily picked up in the ordinary course of examination. This is particularly true in patients at all advanced. The mouth and tongue symptoms; stomach and intestinal disturbances; spinal cord degenerative signs together with the yellow tint of the skin; progressive weakness, without marked loss of body fat, are readily recalled. Signs of blood destruction and also signs of abnormal blood cell formation, serve to give in microscopic study of the blood, those certain characteristics which distinguish or identify pernicious anemia. The high color index and the low red cell count stand out as signally important criteria in the diagnosis. Definite abnormalities of the red cells are found, which need not be cited here.

The acknowledged fatality of the disease under any and every sort of treatment makes for a grave challenge to medical progress. Since pernicious anemia was first described, by Addison in 1855, up to the present time, medical treatments of one sort and another have been employed. By some clinicians for a time a particular method of treatment may have been favorably considered, but in the course of time, no treatment has stood the test.

The past two years has seen the presentation of a system of treatment which to say the least presents favorable data of about 150 cases of pernicious anemia. This is probably the largest group of this disease ever studied.

The combined papers of Minot and Murphy and Koessler and Maurrer, appearing within the past two years, presents a consideration of this disease from the standpoint of the treatment which rightfully arrests the attention of clinicians. It is all very well for individuals to suggest this or that objection, based upon the study of a few cases but the weight of opinion must be yielded to those who can present findings of importance after a study of 150 cases of this rather infrequent disease. The use of both groups of cases, above referred to, is employed because both groups of observers emphasize the same fundamentals. Minot and Murphy emphasize liver, and Koessler and Maurrer, vitamines; but a reading of the details of treatment disclose that fundamentally, there is marked similarity. So one may, in commenting, say generally that a favorable method of treatment based upon the rich vitamine and high caloric diet treated with indications of steady improvement in 150 cases, gives one the feeling that a big fundamental has been struck in the treatment of pernicious anemia.

Bile Flow.

Snell and co-workers have been making interesting studies on animals in the experimen-

tal obstruction of bile flow from the common duct, with special reference to the production of diseases of the liver and of the measure of impaired hepatic function thereby superinduced. Fructose tolerance test; nitrogen partition in the blood; serum bilirubin, and the phenoltetrachlorphthalein test were thus studied. The paper, of the present comment, reports work upon the bromsulphthalein of Rosenthal and White, the bile acid content of the blood, and the elimination of intravenously injected bile acids.

Our readers are asked to read this paper. The retention of bromsulphthalein closely paralleled the degree of bile retention and was in agreement with the tests of phenoltetrachlorphthalein, previously reported; the bilirubin content of serum decreased as the later stages, of induced hepatic disease, advanced. While intravenously injected bile salts were rapidly removed from blood stream of normal animals, in animals with obstructive jaundice, by ligations of the common duct, there was marked retention of bile acids.

Besides the important findings of these tests, which appear to possess special interest as criteria for judging hepatic disease and bile flow, the experiments showed certain clinical signs of liver disease which interests the practitioner and clinician. As much of the daily work of the internist and practitioner has to do with impaired hepatic function and advanced liver disease, the production of spectacular signs of liver disease and all its vascular compensatory phenomena, in a group of animals in the course of some three months, affords a special opportunity to observe the rapid demonstration in the animal of a disease that in man takes years to consummate.

They studied fifteen animals; one group in which the common duct was ligated; another group in which cholecystectomy was performed, in addition to the ligation of the common duct. The animals were fed a diet of milk, meat, and dog-biscuit. After the obstruction by ligation of the common duct was made the dogs showed (1) anorexia (2) weakness (3) progressive loss of weight. To overcome these symptoms some of the dogs were daily fed by a stomach tube with a mixture of corn syrup and milk. This helped to keep the dogs in better condition following operations. Two of the dogs lived for 108 and 120 days.

It is worth while to follow the history of dog in Experiment I. October 29, 1925, a twenty pound dog, female, was operated upon and the gall-bladder was removed and the common bile duct was ligated in two places and severed. This dog lived 108 days. The day after operation jaundice appeared in the eyes and mucous membranes and in the urine. On November 1, this jaundice was very marked and feces were of a light color. The dog gradually, with feeding by corn syrup and milk, recovered from the operation and attained a fairly good condition. The jaundice gradually decreased and the animal gradually lost weight.

In about eight weeks after the operation, with a decrease of jaundice evident, interesting phenomena of the collateral circulation began to appear on abdominal wall, with dropsical accumulation of fluid in the abdominal cavity. Ascites increased rapidly and by January 1st, an increase in weight was observed. On February 1st the weight was about twenty-three pounds, the hind legs were swollen and there was edema of the abdominal wall and ascites. On February 14th, the dog died. Necropsy showed marked edema of the abdominal wall and hind legs, and 3,800 c.c. of ascitic fluid was removed from the abdominal cavity. Signs of collateral circulation were noted in the vessels of the omentum; in the veins of lower part of the esophagus, in the stomach circulation; in the veins of Sappey; in the splenic vessels, and in the pelvic plexus of veins. There was at necropsy very little evidence of bile stain in tissues or fluids of the body. The liver was small, shrunken, tough and reddish brown, freely mottled with granular formations. The common duct was greatly distended and the obstruction was complete.*

Such a course of events superinduced by ligation of the common duct brings to mind that course of clinical events observed in hepatic disease in the human following infective disease of the gall-tract and in certain diseases of the liver. Every clinician has seen the development of such a train of symptoms, more or less parallel to those in these dogs. The degree of the symptoms varies, of course, with the completeness and permanence of the damage done. Persistent resistance to the outflow of bile; constant abridgment of hepatic function; years of over use of hepatic cells,

*The work of Snell and Greene and Rountree, Archives of Internal Medicine, Oct. 15, 1927.

by excess of food or drink, chronic focal infection of the gall-tract or the bile radicals, may bring in the human, in the course of time, what was induced in three months in the dog.

Gall-Bladder Disease.

Rehfuss has recently discussed differential diagnosis of gall-bladder disease (*Annals of Internal Medicine*, Vol. I., No. 2, Pg. 80). He takes the following point of view:

1. Gall-bladder disease is an effect rather than a cause; a result rather than a provocative agent in many cases.

2. Gall-bladder disease cannot be divorced from the central hepatoenteric system of which it is a link in the chain.

3. Gall-bladder may be considered as an actual functioning diverticulum in the afferent transit system from the liver to the bowel.

4. Gall-bladder disease rarely exists alone. The liver is usually implicated.

Following the thought of Heyd and MacNeal it is stated that cholecystitis is only a part of a generalized chronic infection, that cholecystitis is frequently associated with a certain degree of pancreatitis; that the colon is nearly always affected in some way; that the portal system is in many instances involved. In making a diagnosis the history, physical examination, X-ray examination, duodenal intubation and study of the blood serum, such as the Van Den Bergh reaction, the icterus index, blood cholesterol, are properly employed.

News Notes

We wish our readers and those they hold dear
A Merry Christmas and Happy New Year!

Tularaemia Situation.

A recent article, on the subject of Tularaemia, in one of the popular weekly Journals having a large circulation has led to a wide spread interest in this disease throughout the state. The interest caused by this article and the desire for facts concerning the disease as evidenced by numerous inquiries causes me to believe that a brief statement as to the actual situation might be of interest.

In the February issue this year of the *Medical Monthly* a brief article was published describing the symptoms of Tularaemia and other pertinent facts regarding this disease. These facts will not be repeated but a reprint will be gladly forwarded to anyone interested. The publication of this article had one very interesting result. It attracted the attention of Dr. C. H. Davidson, who had had, in a certain section of Rockbridge County, a series of cases of fever which had never been satisfactorily diagnosed. After reading this article he obtained blood specimens from several of these patients. Even though the cases were several years old the agglutinins were found to be still present in the blood thus giving a positive diagnosis for Tularaemia. Two of these cases occurred in 1920 and are probably the first definitely known cases in the eastern part of the United States.

Up to the present time we have had in the State of Virginia definite knowledge of only twelve cases of this disease. There have probably been many more cases, nevertheless, I believe there have not been enough cases to justify the fear that has arisen. The twelve cases of which we have definite knowledge are as follows:

One from Chesterfield County (1924), by Dr. T. S. Shelton, Richmond.

Three from Rockbridge (two in 1920 and one in 1925), by Dr. C. H. Davidson, Lexington.

Four from Lee County (1925), U. S. Public Service Report, Feb. 26, 1926.

One from Surry County (1925), by Drs. Douglas Vanderhoof and T. D. Davis, Richmond.

One from City of Richmond (1926), by Dr. C. I. Sease.

One from Essex County (1926), by Dr. F. B. Wilson, Tappahannock.

One from Pittsylvania (1927), by Dr. J. C. Anderson, Chatham.

As noted above there has been only one case so far in 1927. The actual situation does not apparently justify the fear that has arisen concerning the eating and handling of rabbits. Rabbits that appear sick and those brought in by dogs or cats should be avoided. It would likewise be advisable for any person handling large numbers of rabbits to use rubber gloves habitually. Tularaemia is nearly always contracted by material from a rabbit getting into an open cut or sore on the hand. There is, of course, no danger from the eating of the cooked rabbit.

It is urged that physicians send in specimens of whole blood from all suspected cases, so that if this disease is prevalent in any part of the State steps can be taken to control it.

AUBREY H. STRAUS, *Director,*
Laboratories State Board of Health and Richmond Health Bureau.

The Post-Graduate Medical Society of Southern Virginia

Held its regular meeting at Surry. November 8th, under the presidency of Dr. E. W. Young, of Petersburg. Dr. W. C. Powell, Petersburg, is secretary-treasurer. Following a subscription dinner, the first part of the program was given over to "Journal Hour" which was participated in by Dr. W. W. Seward, of Surry, Dr. J. H. Parker, of Dendron, and Dr. Herbert C. Jones, of Petersburg. Following this there was a symposium on "Pneumonia", which was discussed by Dr. J. M. Bailey, of Hopewell, Drs. W. M. Bowman, J. Bolling Jones, W. A. Reese and W. B. McIlwaine, of Petersburg. Discussion on this was opened by Dr. Joel Crawford, of Yale, and Dr. F. E. Steere, of Claremont.

This Society is composed of doctors from the counties of Nottoway, Dinwiddie, Prince George, Greensville, Brunswick, Surry and Sussex, and the attendance of thirty-three at this meeting gives promise of its being an excellent organization.

The Lee County Medical Society,

At a meeting held recently, re-elected Dr. C. C. Pearce, of Pennington Gap, president, and elected Dr. P. D. Pence, of St. Charles, secretary.

The Augusta County Medical Association

Held its regular tri-monthly meeting in Staunton, November 2, the members joining in a subscription supper. Dr. J. Fairfax Fulton gave his address as president, and Dr. M. J. Payne read a paper on "Some Phases of Anemia". Dr. W. F. Hartman, Staunton, R. D. 7, is secretary, and Dr. T. M. Parkins, Staunton, treasurer.

The Clinch Valley Medical Society

Held its semi-annual meeting at Norton, November 4, with an attendance of forty-four members. Dr. C. B. Bowyer, Stonega, presided. Papers were presented by Dr. W. W. Cort, professor in the school of Hygiene, Johns Hopkins University, Baltimore; Drs. N. H. Short, W. R. Culbertson and G. B. Setzler, of Norton; Dr. Charles Stevens of the Department of Experimental Medicine with Parke, Davis and Company; Drs. J. D. Willis, Roy M. Hoover and E. G. Gill, of Roanoke; and Dr. Albert H. Hoge, of Bluefield, West Virginia. At the business session, the following officers were re-elected for a year: President, Dr. C. B. Bowyer, Stonega; vice-presidents, Drs. J. M. Daughtery, Nickelsville, P. D. Pence, St. Charles, and T. T. McNeer, Dante; and secretary-treasurer, Dr. J. C. Sutherland, Clintwood.

It was decided at this meeting that the seven counties comprising the Clinch Valley Medical Society—Wise, Tazewell, Lee, Russell, Dickenson, Buchanan and Scott—should each have a separate charter from the State Society and that the members from these counties should go into separate sessions at the meeting of the Clinch Valley Society to transact business or consider any questions of particular interest to the respective counties, but that they should have their papers and scientific sessions together. This plan should give the advantage of a stronger organization and better programs altogether.

The Piedmont Medical Society

Met at Orange, Va., December the 2nd, with a registered attendance of thirty-seven. This was an exceedingly interesting meeting with demonstrations and talks by Dr. Frank Stafford, of Blue Ridge Sanatorium, Dr. J. Edwin Wood, Dr. Wm. H. Goodwin, and Dr. V. W. Archer, of the University of Virginia. Dr. Archer substituted for Dr. J. S. Davis, who was taken ill after publication of the program. The importance of the organization of all counties composing the Piedmont Society was discussed and met with the endorsement of that body. It is hoped that all these counties may soon decide to secure charters from the State Society and arrange to have separate county meetings for a short period during meetings of the district society.

The following officers were elected for 1928: President, Dr. H. T. Nelson, Charlottesville; vice-presidents, Dr. W. C. Mason, Gordonsville, and Dr. H. L. McCoy, Crozet; secretary-treasurer, Dr. Lewis Holladay, Orange.

It was decided to hold the next meeting in Fredericksburg, Va., the latter part of May, in conjunction with the Northern Neck Medical Society.

The South Piedmont Medical Society

Held its semi-annual meeting in Danville, November 15th, under the presidency of Dr. Sam Wilson, of Lynchburg, Va. Dr. Geo. A.

Stover, South Boston, was in his accustomed place as secretary. In addition to several interesting papers by members and invited guests, there was a symposium on "The Diseases of the Heart Met with in General Practice", which was discussed by Dr. H. H. Hurt, of South Boston, Dr. T. N. Davis, of Lynchburg, Dr. J. J. Neal, of Danville, and Dr. O. O. Ashworth, invited guest of Richmond.

The Virginia Pediatric Society

Held its second annual meeting at St. Paul's Parish House, Petersburg, Va., Wednesday October 19, the president, Dr. N. Thomas Ennett presiding. For the purpose of mutual benefit it is the policy of the Pediatric Society to meet at the same time and place as the Virginia State Medical Society.

It was a very enthusiastic and interesting meeting and about thirty members of the Society were present. The Constitution and By-Laws were adopted and problems of child life and the practice of pediatrics were discussed in an informal manner.

The guest of honor was Dr. Wilburt C. Davison, Dean of Duke University. Dr. Davison spoke briefly during the discussion. The topic for discussion was: "Suggestions As To What Can Be Done To Develop The Virginia Pediatric Society To Its Broadest Possible Usefulness To The People and The Medical Profession of Virginia." The leaders for discussion were Dr. Franklin Wilson, of Norfolk, and Dr. Lawrence T. Royster, of the University of Virginia.

The following officers were elected for the coming year: President, Dr. Lawrence T. Royster, University; vice-president, Dr. Chas. E. Conrad, Harrisonburg; secretary-treasurer, Dr. Wm. B. McIlwaine, Petersburg.

After this the meeting was adjourned to meet October 17, 1928, in Danville, Virginia.

The Virginia Pediatric Society which was organized at Norfolk, October 13, 1926, promises, from the evident interest taken in it and with the membership of now over fifty, to be a vital adjunct in advancing the child welfare program of the State Board of Health and pediatrics in general throughout the State.

The Virginia Hospital Association

At a meeting held in Petersburg, October 19th, 1927, elected the following officers: Dr. J. M. Shackelford, Martinsville, President; Dr. Hugh H. Trout, Roanoke, and Dr. J. E. Rawls, Suffolk, vice-presidents, and Dr. John O. Boyd, Roanoke, secretary-treasurer.

The executive committee is composed of Drs. F. H. Smith, Abingdon, A. T. Finch, Chase City, and W. E. Brown, Charlottesville.

The next meeting will be held in Danville during the next meeting of the Medical Society of Virginia.

Married.

Dr. Carleton Moorman, Altavista, Va., and Miss Mary Katharine Smith, Martinsville, Va., November 16.

Dr. M. E. Hundley, Martinsville, Va., and Miss Mary Kate Black, daughter of Dr. Hugh R. Black, of Spartanburg, S. C., November 16.

Dr. Robert Felix Gillespie, recently of Wilder, Va., and Miss Mary Virginia Jessel, Lebanon, Va., November 16. Upon return from a wedding trip they located at Bastian, Va.

Dr. I. H. Goldman, and Miss Katherine Trauerman, both of Richmond, Va., November 28.

Dr. Guy Carleton Amory, Hilton Village, Va., and Miss Bessie Lee Granger, Richmond, Va., November 26. Dr. Amory is a member of the class of '26, Medical College of Virginia.

Major Allen J. Black, U. S. A.

Former Virginian who has recently been stationed at Ft. Andrews, Mass., is on leave of absence in Richmond until the first of the year.

Chinese Playground, San Francisco, Real Recreation Center.

The Chinese playground in San Francisco's Chinatown district has proved a real center of recreation for 300 to 500 children daily who would otherwise have only the narrow streets of Chinatown for play space. This playground, opened some time ago as an experiment, was started with some misgivings, the director says, because of the deep-rooted class distinction among the Chinese people. The leaders, however, have been successful in conducting all the play activities on the basis of complete equality by appealing to the Chinese pride in politeness.

Dr. Paul Redd,

Who has been practicing at Yorktown, Va., for several years, has returned to Richmond, and is located at 2706 Fourth Avenue, this city.

State Supervision of Classes for Special-Problem Children.

Nine States conducted special classes for the care and treatment during school hours of defective or special-problem children. These

classes are under the supervision of one or more members of the staff of the State Department of education. Alabama, Connecticut, Minnesota, New Hampshire, New York, Ohio, Pennsylvania, Wisconsin, and Wyoming are the States that reported such service in 1926.

Dr. B. L. Naiman,

Of Norfolk, Va., has moved to Washington, D. C., and has offices at 1748 N Street, Northwest.

Dr. T. Duckett Jones,

University, Va., son of Dr. J. Bolling Jones, of Petersburg, Va., is spending a year in London, England, where he is taking special heart work at the University College Hospital Medical School.

Dr. W. E. Ritter

Announces that he has moved from Whitewood, Va., to West Graham, Va.

Scientific Exhibit at A. M. A. Meeting.

The Committee on Scientific Exhibit of the American Medical Association announces that it will now begin receiving applications for space at the Minneapolic meeting, June 11-15, 1928. All applications must be received before March 20th. The Scientific Exhibit will be housed in the Minneapolis Auditorium, in which building will also be the Registration Bureau, Technical Exhibits, and some of the Sections of the Scientific Assembly. Those interested in securing space for scientific exhibits may secure application forms for space from the Director of Scientific Exhibit, A. M. A., 535 N. Dearborn Street, Chicago, Ill.

Dr. A. G. Coumbe,

Who has been serving as manager of the sub-office, U. S. Veterans' Bureau at Honolulu, T. H., has been transferred to the U. S. Veterans' Hospital, at Fort Bayard, New Mexico.

The Association of Women Physicians of the South

Held its annual dinner in Memphis, Tenn., during the meeting of the Southern Medical Association, on Wednesday evening, November the 16th, just prior to the president's reception. This is a social organization in which all women doctors in the Southern Medical Association are eligible to membership. Drs. Mary Baughman and Pauline Williams, both of Richmond, were the only women doctors from Virginia in attendance. Dr. Anna Sawyer, Atlanta, Ga., was elected president for the coming year, and Dr. Mary B. Baughman, Richmond, was elected secretary-treasurer.

Austria's New Social-Insurance Law.

A law regarding sickness, accident, and invalidity insurance, passed April 1, 1927, makes insurance compulsory for all manual workers and apprentices, except those employed in agriculture and forestry. In the law of 1888, which this supersedes, and all previous laws, only those whose wages were below a certain amount were insured, and benefits were less generous. A law of 1920, however, requires all clerical workers to be insured.

Under the law of 1927 sick benefits are paid not only to insured persons, but also to the noninsured wives of insured men and their dependent children, whether legitimate or illegitimate. The sick benefits consist of cash payments, and medical aid, though institutional care may be substituted. Insured women are entitled to maternity benefit, paid at the rate of the sick benefit, for six weeks before and six weeks after confinement. Noninsured wives of insured men receive one-half of the regular sick benefit during that time. Nursing mothers, whether wives of insured men or insured in their own right, receive for twelve weeks a nursing benefit paid at half the rate of the sick benefit.

Surgeon H. McG. Robertson,

Public Health Service, has been relieved from duty at the Marine Hospital, in Boston, Mass., and directed to report to the Surgeon General, Washington, D. C., for duty. Dr. Robertson is a native of Virginia and a member of our State Society.

Dr. J. W. Devine

Has returned to his home in Lynchburg, Va., after taking a course in surgery at the Mayo Clinic.

Dr. H. T. Schiefelbein,

Of the class of '23, Medical College of Virginia, for sometime of Eckman, West Virginia, is now taking post-graduate work at Bellevue Hospital, New York, City.

Dr. W. D. Woolwine

Has returned to his work at Pearisburg, Va., after nearly two years at Catawba Sanatorium, Va.

For Sale—17,000,000 Christmas Seals!

More than a billion and a half Christmas Seals have been distributed by the National Tuberculosis Association, this year, the Virginia Association having taken 17,000,000 for

sale in this State. These seals that are sold for one cent each have made possible the organized campaign against tuberculosis that has been carried on with ever-increasing emphasis year by year. These Christmas seals also stand for something more, for they are truly health seals, since whatever helps to prevent tuberculosis helps to make for health.

With the money raised by the sale of seals there have been secured hundreds of sanatoria, where those ill with tuberculosis may receive care; preventoria, where children who have been exposed to the disease may be built up to resist its attack; tuberculosis nurses to care for patients who are ill in their own homes; and clinics, where examinations and advice are freely given. To thousands of people has been given the optimistic message that tuberculosis is a curable disease.

Steady progress is being made in the fight against it, for since 1915 the death rate from it has been cut forty-one per cent in Virginia. Christmas seals furnish the ammunition that is helping to win the battle. Let each one do his bit.

Invitation to Virginia Doctors.

The Medical Society of the District of Columbia has sent an invitation to all physicians visiting in the Nation's Capitol to make their Society building at 1718 M Street, Northwest, medical headquarters while in Washington. There will be found a library containing current medical periodicals, daily lists of clinics held in the various hospitals and opportunities for making personal contacts with the local profession.

Investigation of Effects of Child Labor.

In order to determine the effect of labor upon juvenile delinquency, the Government of the Federal District of Mexico made an examination of children who came before the children's courts. It was decided that the effect of labor upon children is a noticeable physical inferiority and a tendency toward delinquency. A commission has been appointed to visit establishments employing children, so that cases of child labor may be reported and fines may be imposed on employers who work children overtime. Hygienic working conditions for children will also be required.

Progress of New York Medical Center

Such progress has been made on the Medical Center of New York in the past year, that by the first of February, 1928, the first unit, "The Presbyterian Hospital Training School for Nurses", is to move from its old quarters at 71st Street to its ultra modern new residence at the Medical Center, Broadway and 168th Street. This building is a fifteen story skyscraper, constructed in the form of the letter H so that each room will have its own share of sunlight. It is connected by a tunnel with the main group of buildings which house the College of Physicians and Surgeons, the Presbyterian Hospital, the Sloane Hospital for Women, and the Squier Urological Clinic.

This grouping of medical institutions is unique in that the skyscraper, the building type that is individual to New York, is used to solve its hospital problem.

The buildings are all being thoroughly dried out in preparation for the opening of the hospitals, clinics, etc., in April, 1928.

Return from Philadelphia.

Dr. Thomas E. Hughes and Dr. E. Trible Gatewood have returned to their homes in Richmond, after spending some time in Philadelphia, where they took special work under Dr. Chevalier Jackson in bronchoscopy, esophagoscopy and endoscopic therapy.

Dr. Jackson Honored.

Dr. Chevalier Jackson, chief of the bronchoscopic clinic of Jefferson Hospital, Philadelphia, was recently the recipient of the cross of a chevalier of the legion of honor, conferred by the French government.

Courses of Lectures in German.

The faculty of medicine of the Vienna University arranges courses of lectures in German every year, in order to enable doctors to continue and complete their studies, and to give them an opportunity of training in special branches. Four times a year—in February, June, September and November—International finishing courses, lasting two weeks each, are arranged, dealing with the progress in the different special branches.

The syllabus of these courses of lectures and the conditions for attending them can be obtained from the secretary, Dr. Kronfeld, Wien IX., Porzellangasse 22 or from the "Kursbureau" of the Vienna faculty of medicine, Wien VIII., Schlosselgasse 22. Applicants by letter are requested to enclose an international stamp-coupon for reply. Doctors are also given every information concerning board and lodging.

New Hospital for Crippled Children in Minneapolis.

It is expected that construction will start

this fall on the new William Henry Eustis Hospital for Crippled Children, which is to be built on the campus of the University of Minnesota. The funds for the new hospital, amounting to nearly $600,000, have been provided entirely by Mr. Eustis, a former mayor of Minneapolis, who has established a trust fund for the maintenance of the hospital. The out-patient department will be financed by State funds already appropriated for the purpose.

Dr. Algernon S. Hurt, Jr.,

Richmond, of the class of '26, Medical College of Virginia, is a fellow in the Mayo Foundation, majoring in pediatrics.

Dr. Wilkins J. Ozlin,

Dundas, Va., is home again after spending about eighteen months at Catawba Sanatorium, Va.

Dr. F. O. Plunkett,

Lynchburg, Va., is spending some time in Chicago, where he is taking post-graduate work in obstetrics.

Doctors and Dentists Hold Joint Meeting.

The Richmond Academy of Medicine and the Richmond Dental Society held a joint meeting in this city, November 8th, which was largely attended. The addresses of the evening were made by Dr. Percy Howe, of Boston, Mass., President of the American Dental Association and director of the Research Division of the Harvard Dental School, his subject being "Influence of Diet on the Teeth and Their Supporting Tissues in Health and Disease", and by Dr. Thomas P. Sprunt, of the Medical Department of Johns Hopkins Hospital, whose subject was "Medical Aspects of Infections Arising in the Mouth."

American Board of Otolaryngology.

An examination was held in Detroit on September 12th, during the session of the American Academy of Ophthalmology and Otolaryngology. There were one hundred and two applicants for examination, with .107 per cent failures. An examination was held in Memphis on November 14th, preceding the session of the Southern Medical Association, with .127 per cent failures. In the course of the past year, three hundred and sixty-nine applicants have been examined.

In 1928, examinations will be held in Minneapolis, on June 11th, at the session of the American Medical Association, and in St. Louis, on October 15th, during the meeting of the American Academy of Ophthalmology and Otolaryngology.

Prospective applicants for certificates should address the Secretary, Dr. W. P. Wherry, 1500 Medical Arts Building, Omaha, for proper application blanks.

Visit Planned to European Medical Centers.

The American College of Physical Therapy, the International League against Epilepsy, and the American Psychiatric Association have arranged visits to the European centers for next Spring. The purpose of these visits is to obtain by personal contact a comprehensive idea of what is taking place across the water and these Societies cordially extend to the entire medical profession an invitation to participate.

Perhaps the largest party to go abroad will be the American College of Physical Therapy. This group will sail from New York on May 26, 1928. The epileptologists and psychiatrists will precede them, sailing on March 17.

While in Europe psychiatrists will visit several of the leading clinics, including the famous "Bethel Colony of Epileptics," in Bielefeld, Germany. At various stages of their journey clinical discussions will be held. At these meetings leading specialists in psychiatry will address them.

The high point of the Physical Therapy tour will be the visit to Prof. Rollier's famous hospital in Leysin, Switzerland. This is the most famous clinic of its kind in the world, and where Dr. Rollier conducted his first experiments with heliotherapy.

Dr. R. D. Caldwell,

Lynchburg, Va., is taking special work in pathology at the Mayo Clinic, Rochester, Minn.

Dr. David P. Evans,

Of the class of '26, University of Virginia, Department of Medicine, upon completing his internship in medicine and pediatrics at the New York Post-Graduate Hospital, New York City, in the summer, accepted the position of resident pediatrician in the Jersey City Hospital, Jersey City, N. J., in which place he now is.

Handicap of the Hard-of-Hearing Child.

In one city school fifty-seven hard-of-hearing children repeated sixty-six classes, while fifty-seven with normal hearing, picked at random, repeated only eighteen classes. In another city there were three and one-half times as many hard-of-hearing as of normal hearing children who repeated grades. This report, based upon a two-year study, was given by a

special commission on education for the hard-of-hearing at the Annual Meeting of the American Federation of Organizations for the Hard-of-Hearing, held at Chautauqua, N. Y., in June, 1927. The commission recommends that special lip-reading classes be formed for children with defective hearing. To prevent such children from acquiring the peculiar voice and enunciation of the totally deaf, they should be returned to the regular classes after enough facility to follow classroom instruction has been acquired.

Dr. Nat H. Copenhaver,

Bristol, Va.-Tenn., as vice-president, has succeeded the late Dr. Sparrell Gale as active head of the Roanoke College Alumni Association until its annual meeting.

Dr. Ben H. Gray,

Richmond, was elected a member of the board of directors of the Country Club of Virginia, at its meeting last month.

Budapest Congress.

The Fifth International Medical Congress for Industrial Accidents and Occupational Diseases is to be held in Budapest during September, 1928. Dr. Tibor de Verebely, Professor at the University, is president of the executive committee.

The National Committee for the United States has been created and consists of the following: Dr. Volney S. Cheney, Chicago; Dr. R. W. Corwin, Pueblo; Dr. Eugene L. Fisk, New York; Dr. Otto P. Geier, Cincinnati; Dr. Leonard Greenburg, New Haven; Dr. George M. Kober, Washington, D. C.; Dr. W. J. McConnell, Philadelphia; Dr. Lloyd Noland, Birmingham; Dr. Francis D. Patterson, Philadelphia; Dr. George M. Price, New York; Dr. Frank L. Rector, Chicago; Dr. Wm. A. Sawyer, Rochester; Dr. Henry F. Smyth, Philadelphia; Dr. C. E. A. Winslow, New Haven; and Dr. Emery R. Hayhurst, Columbus, *Chairman*. A number of addresses have already been scheduled by various prominent Europeans.

Addresses and lectures are wanted from American physicians, dentists, and other specialists in the field. Such are requested to get in touch with the Chairman for the National Committee for the United States, Dr. Emery R. Hayhurst, Hamilton Hall, Ohio State University, Columbus, Ohio. General invitation is also extended to attend the Congress which will be arranged so as to coordinate with the "Deutscher Naturforscher Tag" to be held in Hamburg, and the "Orthopadenkongress" to be held at Prague during the month of September, 1928.

Honor Dr. E. G. Williams.

The Virginia Education Association, meeting in Richmond, in November, voted to name the State Preventorium now being erected at the University of Virginia, The Ennion G. Williams Preventorium, in honor of Virginia's State Health Commissioner since 1908. The building is located at the University of Virginia and is being erected by voluntary subscriptions from the teachers as part of the University's medical extension program. It will provide accommodations for teachers who by treatment might be saved from serious illnesses.

Dr. Joseph Horgan,

Of the class of '26, University of Virginia, upon completion of his internship at Bridgeport Hospital, Bridgeport, Conn., located in Washington, D. C., where he is associated with his brother Dr. Edmund Horgan in the practice of surgery.

Scarlet Fever Control.

In a recent symposium on the control of scarlet fever, it was brought out that while the incidence of the disease had not been materially lessened during the last forty years, its severity had markedly decreased so that scarlet fever now causes fewer deaths than either measles or whooping cough.

Dr. F. A. Sinclair,

Newport News, Va., has been elected president of the Tidewater Fox Hunters' Association for the coming year.

The Civil Legion,

A National organization composed of those who in non-uniformed activities rendered patriotic service to the National cause during the World War, recently held its second annual convention and elected officers. The following doctors are among the members of the Virginia State Executive Committee: Drs. N. Thomas Ennett and Joseph A. White, Richmond; Dr. O. R. Fletcher, Sanford; Dr. Martin D. Delaney, Alexandria; Dr. W. D. Woolwine, Pearisburg; Dr. J. J. Hagood, Clover; Dr. William F. Drewry, Petersburg; Dr. L. O. Crumpler, Danville; and Dr. George W. Brown, Williamsburg.

National headquarters are at 163 West Washington Street, Chicago, Illinois.

The Seaboard Air Line Railway Surgeons Association,

At its meeting recently held in Miami, Fla., elected Dr. B. J. Witherspoon, of Charlotte, N. C., president. Dr. W. C. Powell, Petersburg, Va., was elected one of the vice-presidents. Dr. Joseph M. Burke, Norfolk, Va., is chief surgeon of this road.

Negro Boy Scouts.

Mr. Stanley A. Harris, a nephew of Joel Chandler Harris, has recently been appointed by the National Boy Scout Organization as director of interracial relations. His chief duty will be to spread the Boy Scout movement among colored boys. Mr. Harris has been connected with the Boy Scouts organization since its beginning. Last summer he conducted a course for Scout leaders at the Hampton Summer School, for which about thirty men registered, and it is hoped that the course can be made a yearly feature of the school.

Dr. Lawrence T. Royster,

Professor of Pediatrics at the University of Virginia, addressed the Richmond League of Women Voters, December the 8th, on child welfare work in Virginia.

Dr. J. T. Walker

Recently returned to his home in Gordonsville, Va., after a visit of some length at Maben, West Virginia.

Dr. W. L. Devany,

Dendron, Va., is home again after an extended visit to the Western States.

Dr. C. F. Manges,

Class of '25, Medical College of Virginia, who has been practicing for a time in Christiansburg, Va., has just located at Blacksburg, Va., where he will be engaged in general practice.

Canadian Juvenile Immigration.

The British and Canadian Governments have agreed to a joint expenditure of £1,000,000 over a period of ten years, in the form of recoverable advances, to assist British youths to become farmers on their own account in Canada. To be eligible, the boys must have received assisted passage, be between fourteen and twenty years of age on arrival in the Dominion, have passed through the provincial training centers, acquired the necessary training and experience by working for wages on a farm, and saved approximately $500. Boys thus qualifying, on reaching twenty-one years of age may be loaned an amount not exceeding $2,500 for the purchase of a farm, stock, and equipment. The Dominion Government will administer this scheme, which will come into effect next April.

During a recent year farmers and householders made application for nearly 14,000 British boys and girls, while the number between the age of fourteen and seventeen brought to Canada through Government grants for passage was less than 2,000. This indicates how far the demand exceeds the upply.

Laboratorians in Bacteriology and Roentgenology Needed for Government Hospitals.

The U. S. Civil Service Commission, Washington, D. C., announces that hospitals of the U. S. Public Health Service and the Veterans' Bureau throughout the country are in urgent need of laboratorians in bacteriology and roentgenology. Applications for the positions will be rated as received until January 7, 1928. Applicants will not be required to report for examination, but will be rated on their education, training and experience, as shown by sworn statements and corroborative evidence. In securing details, ask for application blanks for Form 2374.

Health and Sunlight in England.

The "summer peak" of infant deaths has disappeared from the annual charts of infant mortality in England, and summer has become the safest part of the year for babies, according to Dr. Saleeby, chairman of the Sunlight League, speaking at a meeting during the National Baby Week recently held in London. It is now the dark first quarter of the year which is the most dangerous time for infants, but Dr. Saleeby expects improvement there through the operation of the new smoke abatement act which came into force last July, and which he believes will add an appreciable percentage of ultra-violet light to the cities.

The Seaboard Medical Assocation of Virginia and North Carolina

Is holding its annual meeting in Norfolk, Va., as we go to press. Dr. B. R. Kennon, Norfolk, is president, and Dr. Clarence Porter Jones, Newport News, is secretary. Indications from the program are that this will be an interesting meeting as are all of the sessions of the association.

Dr. Anita Lotti,

Of the class of '25, University of Virginia, after an internship in Washington, D. C., has located in Charlottesville, Va., with offices at 415 First Street, Northeast.

The Southside Community Hospital,

Located at Farmville, Va., was opened November the 9th. The hospital cost $250,000 and was made possible by the large gift from the Commonwealth Fund of New York. The center portion of the hospital is two stories in height, with two wings of one story each. It is modern in every respect and has fifty beds and a staff of six graduate nurses and several nurse attendants in addition to the necessary office force. Mr. Harry Smith, chairman of the board of directors of the Comonwealth Fund, in a talk at the opening exercises, stated that the Fund proposes to offer a limited number of fellowships to local physicians for post-graduate study and plans annual institutes and educational clinics.

That Blue Slip Again!

In this issue of the MONTHLY, will be found a blue slip which we hope is a loud enough color to speak for itself. Members who have paid their 1928 dues to the Society need pay no attention to it. If the rest of our members will heed its warning. it will prevent them receiving many unwelcome letters and will save the Society's office an immense amount of detail work.

Please give us your co-operation in this.

Dr. and Mrs. Tom A. Williams,

Formerly of Washington, D. C., now of Miami, Fla., have returned from a summer spent in Florence, Italy. On their way from New York, they visited a number of the larger eastern cities.

Additions to Winchester Memorial Hospital Completed.

On November 10th, an informal reception was held at the new Memorial Hospital in Winchester, Va., that the public might inspect the plant which has been greatly enlarged. The improvements cost nearly $200,000 and it is claimed that the Winchester Memorial is now the fifth largest hospital of its kind in the State. The new three-story addition has increased its capacity from seventy to one hundred and thirty patients. This hospital is now modern in every respect.

Commission on Juvenile Delinquency in France.

A decree issued by the President of France on June 8, 1927, provides for the establishment of a National Commission on Juvenile Delinquency, to be attached to the Ministry of Justice. The commission will consist of twenty-five members appointed by the Minister of Justice, vacancies occurring later to be filled by the commission itself. It is to study questions of legislation and of the administration of institutions caring for delinquent children. It will also serve as a link between those institutions, co-ordinating their work and suggesting improvements.

Wanted:

Physician in good standing to take charge of general practice for two months beginning January 8th. Good salary. Address E., care VIRGINIA MEDICAL MONTHLY, 104½ West Grace Street, Richmond, Va. (Adv.)

For Sale:

X-Ray Tube Stand and High Frequency Outfit in excellent condition. Diathermy, Oudin, Tesla currents; Cautery and Diagnostic Lights obtainable conveniently. Address "Tesla", care VIRGINIA MEDICAL MONTHLY. (Adv.)

Obituary

Dr. Robert Glasgow,

For a number of years president of the State Board of Medical Examiners, died at his home in Lexington, Va., November 19, after an illness of several months. He was born at Fincastle, Va., June, 1857, and attended Washington and Lee University. He studied medicine at the University of Virginia, from which he graduated in 1878 and took post-graduate courses in New York City later. He located in Lexington in 1887 and joined the Medical Society of Virginia that year. Dr. Glasgow was one of the best known and most beloved physicians of his section, was school physician at Washington and Lee, and for a number of years health officer of Lexington. He was twice married. His second wife and several children survive him.

Dr. Thomas Carl Walker,

Asheboro, N. C., died October 8th at a hospital in High Point, N. C., of injuries received when he was struck by an automobile. Dr. Walker, who was fifty-six years of age, studied medicine at the Medical College of Virginia, Richmond, from which he graduated in 1895.

Mr. Samuel William Fairchild.

We announce with regret the passing of Mr. Samuel William Fairchild of the firm of Fairchild Brothers and Foster, New York, N. Y., on Sunday, November 13.